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AMERICAN
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Vol. CX, No. 4 NEW YORK, JANUARY 25, 1919 Whole No. 3177

Developing Executive Ability Among Employees

It Pays to Make the Effort — Profited One Utility Company to the Extent of a Saving of $8,000 in Less Than Six Months — The Ratio of Success — Means of Accomplishing the Desired Results

By RALPH ELSMAN
General Manager, Kings County Lighting Company

Business men know, and base their estimates of the capacity of their firms on the limited supply of executives or men and women who possess executive ability. In other words, the old-time saying "There is a lot of room at the top of the ladder" still holds good, and in this period of reconstruction perhaps this lack of executives is more keenly felt than ever.

Plans and schemes constantly are being tried by the managements of various companies to discover latent ability that will lead to promotion of the fortunate possessor.

Theories of development do not always work out so well in the actual practice, but it is my firm contention that it is well worth while to spend months of endless effort on twenty-four disappointments in order to develop one executive and, incidentally, I might say, that this is the ratio of successful candidates for executive positions in the management of the business of to-day.

Recently I had driven home to me very forcibly the necessity for executive ability on the part of men who had been entrusted with important work. It was then that I determined to test out a plan which I long had in mind.

During the course of business many matters arise which seemingly do not belong to any one department but which involve many, but in such a way that they are not of sufficient importance to form a part of the intricate work of any one department.

These matters I overcome by means of committees by placing in the hands of the committee the work of solving definite problems. I follow up with appointing as chairman of the committee an employee who does not at that time hold an executive position. Then I watch for results.

Simply Watch

In no case do I interfere or direct, but rather simply watch the development of the work. One man will take hold with great enthusiasm and will carry the entire burden on his own shoulders, the other members of the committee simply being called together for a report of the work already completed. This act, itself, in my mind stamps the chairman as lacking in executive ability because it is evident that he is unable to rid himself of details. Without this ability he cannot have the advantage of keeping his hand on the rein, yet be constantly free to face other problems of his day and to solve them in order.

Unable to Bring the Committee Together

A second man suffers from the lack of being able to bring his committee together. He may have splendid ideas, but is unable to assume authority which has not been delegated to him directly and in such a way as to make him outstanding as against his fellow committee members. This means that if he were placed in charge of a department he constantly would have to have the backing up of the management of the company to carry on his work.

There is a third type of man who procrastinates, who does not consider the work that has been assigned to him by the committee is of sufficient importance to be given his immediate attention. He puts off his committee meetings, delays his investigations, with the result that within a short time the matter has gone completely from his mind. It is, nevertheless, before the executive management of the company, and the man has defeated his own efforts in gaining the much sought promotion, for he has demonstrated clearly that any department that he might head would be one that could not be counted on for definite results in the line of promoting the welfare of the company.

These three examples, which are simply illustrations of many that could be recited, demonstrate some of the reasons why so many men fail of promotion and why duties which have been given to them, should they be made heads of departments, are gradually taken away from them.

Building for the future by constant attention to the duties of the day and by demonstrating that responsibility will only add to the zest of creating for ourselves a place among the leaders, is a little appreciated means of gaining the desired end.

Perhaps one of the best demonstartions that I possibly could give is that of a department of business far removed from the public utility but one with which I am more or less familiar.

There is in that firm three departments, perhaps of equal value in carrying on the business. In one of them the manager of the department never has time for a visitor, his desk constantly is loaded with details and littered with papers, and he finds it necessary to extend his working hours from early morning until late at night.

An investigation, more or less superficial, showed that the habits of the man were reflected in the results obtained in his department and in the method of conducting his assistants. This man, I regret to say, fell by the wayside and is now holding a clerkship in place of managing a constantly growing department.

Vigor Without Results

The second department is that of a man whom I may perhaps describe as of the modern school, inasmuch as he believes in a great deal of vigor on his part in order that the directors of the company may appreciate the fact that he is earning his salary.

It is unfortunate that he is so busy managing matters that he does not have time to direct the affairs of his subordinates.

The result is that, although his own work is always 100 per cent, that of his various assistants requires constant checking and rechecking for the numerous errors which creep out at the most unfortunate time, and which are simply piling up as black marks against his record.

It might be said at this point also that the man is a believer in pointed signs such as "This is my busy day," "Put pep into your job," "Do not waste my time, and I won't waste yours."

When I was in his office I wondered to myself how much time he had spent in choosing these signs and placing them, and whether his energies were not perhaps misdirected in his scheme of wall decorations.

A Gentleman of Leisure

Now I come to the third department head. No matter what hour of the day a visit may be made at his office, his desk is constantly found clear for action. He always has time for visitors, his mind is ready to grasp any problem presented to him, and he is always in a position to advise with his assistants.

I remember the first day that this man went to work for the company. The swiftness with which he assumed the capabilities of his assistants and his meteoric method of distributing work caused doleful shaking of the head on the part of his fellow department managers, but the results that he has shown have paid. The two and one-half hours that he spent at luncheon almost caused heart failure on the part of the owners of the business, but the constant freshness of his viewpoint and the splendid ideas which he brought into the management of the company have more than repaid the hours that he spends away from his desk, although it must not be understood that he neglects his department by being absent when he should be directing affairs from the floor.

The course of these three men in their struggle for business success has been widely divergent. The first one, as I said, holds a clerkship; the second is becoming daily more and more lax and unable to maintain the best which he set for matters, while the third is now general manager of the company.

I started off this article with the idea of saying something as to the development of an executive in the business world, and I have perhaps wandered far from my point, but I am fully convinced that the good executive will show himself in the committee work such as I have outlined before.

It is not out of place for me to say that one committee, keenly alert to the situation with a large utility company, saved in less than six months $4,000 for the company. A man capable of doing this in those few months will certainly be capable of increasing his own value to the company if given larger and broader opportunities.

Declares Water Gas Process Has Seen Its Best Days and Is Now on Decline

S. W. Parr Discusses Present and Prospective Status of the Gas Industry

As I understand it the chief interest of this organization centers in investigational work along lines primarily of importance to the gas industry.

In this paper I have purposely omitted all reference to the Carbureted Water Gas method, for in my opinion, declared S. W. Parr, Professor Applied Chemistry at the University of Illinois, in his paper on The Present and Prospective Status of the Gas Industry, presented at the January 8 meeting of the Gas Engineering Section of the Western Society of Engineers, this process has seen its best days and is now on the decline, and rightfully so, in Illinois, because we have an almost unlimited amount of gas making coals within our State. Another reason for the certain end of this process is the fact that gas oil and fuel oil are becoming more scarce every day, and will continue to do so because we have eminent chemists striving to get the more valuable products out of the crude oil, leaving less of the products available as gas oil or fuel oil. Furthermore, at no time can the Carbureted Water Gas process compare favorably with the by-product coal gas method in cost of gas production.

In Gas Industry Research Lags

The somewhat overworked term "research" is thus at once brought forward, and for this, certainly in connection with gas interests, no apology is necessary.

Research in the industries in general is now assuming a role of tremendous importance and furnishes many striking illustrations of its timeliness and value. In the gas industry, however, this form of activity lags a little, especially on the chemical side. This seems somewhat strange when we recall that the greatest chemical industries the world has ever known or is ever likely to know are based directly and immediately upon coal tar products. We might naturally expect that more attention would have been given to the production of the "products," but here we are, with a running start on the second hundred years of gas manufacture in this year of grace 1919, doing the same old things in the same old way, substantially as they were done by Le Bon in France and Murdock in London in 1807, and Peale in Baltimore in 1817.

The Boundless Field of What We Don't Know

In these days of evolution and revolution is it not proper that we scan the situation critically as to future developments, to indulge ourselves in speculating upon possibilities which are now latent and undreamed of—the taking of stock, if you please, of what we have been doing and of what we might do if we knew how.

We shall not discuss all of the different problems affecting the gas industry, for that would mean the universe. That would take us into engineering and politics, into psychology and economics. We have neither the abiltiy nor the hours for such a program. For our estimate of the present status as also for our prognostications for the future, we shall stick rather closely to a few fundamental chemical facts. This greatly simplifies and renders very attractive our task. For the time being we are altogether oblivious to engineering and constructional or operating problems. We have no meters, no complaints and no franchise. Moreover, instead of talking about what we know, which would confine us within distressingly narrow and cramped limits, we have before us for discussion the boundless field of what we don't know. That, indeed, is implied in the very idea of research. It takes us beyond the borderland of our knowledge for untrammeled excursions into the unknown. With this freedom and expanse before us we enter what may be truly designated as the Happy Hunting Grounds.

At this point it may be proper to make no further observation—it seems to me we need a sort of formula or prescription as a working basis for research, whether actively engaged in such work ourselves or whether patrons or interested onlookers. If I were to outline such a specification, the first article would proclaim that for every real human need we should believe and proceed on the assumption that sooner or later there would be found a solution for it. Wherever the welfare and progress of society is involved there research is certain in the end to be rewarded. Or, in perhaps more general terms, let us say "anything that is highly desirable to do will eventually surely be done."

This implies supreme optimism. At the gateway to a program of research no pessimist should ever apply; no grouch or any man with the dyspepsia will do. Only those may qualify who conform to Pope's specification where "hope springs eternal in the human breast." This implies faith—faith even to the extent of believing in the possibility of the impossible. The qualification is well though somewhat facetiously covered by a Limerick which runs:

There was a young man who asked, "Why
Can't I look in my ear with my eye?
If I give myself to it, I am sure I can do it."
You never can tell till you try.

Inability to See Beyond Lighting

Now to come somewhat more directly at the specific things of interest to the section. If I were asked to select a text or a creed or an article of faith for this organization I think I could not do better than offer the well-known quotation from an address by Sir William Siemens, delivered in 1881, which reads as follows:

"I am bold enough to go so far as to say that raw coal should not be used as fuel for any purpose whatsoever, and that the first step toward the judicious and economic production of heat is the gas retort or gas producer, in which coal is converted either entirely into gas or into gas and coke, as is the case at our ordinary gas works."

If that was true in 1881, and if there was sufficient development at that time to warrant such a sweeping prophesy, then certainly to-day there is ten-fold more reason for believing in the soundness of his forecast. Note especially his statement "that raw coal should not be used *as fuel* for any purpose whatsoever." This proposition, whether visionary forecast or sound theoretical doctrine or actual obligation for technical procedure, I thoroughly believe in. If this is accepted as a major premise then we are ready to formulate a first corollary to our creed as embodied in the above quotation. It is this: The prime function of the gas industry is that of a purveyor of fuel. It is true that the primary idea in the gas business was to furnish light, and in that capacity it has had a fine record and an honorable career for more than one hundred years. But does not the gas industry sometimes take on the attitude of a man who has been long and intently gazing at a fan-tail flame or an incandescent mantle? When he turns his face away, even though he closes his eyes, he can still see only the hazy outline of a fan-tail flame or an incandescent mantle.

Self-Interest in Low Rates

Before entering upon further discussion of this proposition it will be well to outline another proposition, perhaps another corollary to what has preceded. It would be this: The interest which we represent has been misnamed "The Gas Industry." As a matter of fact we are or should be engaged in the manufacture of certain commodities, in connection with which gas is produced incidentally and as a by-product. The other commodities, therefore, should "pay the freight"—the overhead the fixed charges and profits. Anything, therefore, in addition which the gas could bring in would be all to the good.

If these things could be actually realized then the goal of a gas company's ambition would be, not a dollar and a half rate, but rather a half dollar rate, in order that the larger yield of these "other" profit-producing things might be in evidence.

These are altogether radical, possibly, also, altogether heretical statements. Let us see if they have any scientific basis or evidence of any sort tending to furnish proof, even in any mild degree of their sanity.

Firt, then, as a help toward an analysis of the situation, let us turn to an analysis of the "raw" material with which we are working. An analysis probably of a little different sort or perhaps we should better say an analysis with slightly different interpretations from those to which we are usually accustomed. It will also serve our purpose to base our considerations upon an Illinois coal. In a diagram I will show, the various components are represented as consisting of ash, water, volatile matter and fixed carbon or coke. Let us in this connection recall the fact that these components are not present in the coal as such, but we may obtain them in the forms designated by subjecting the raw coal to a red heat. That is to say there is substantially no free carbon in the raw coal—that practically all of

it is combined chemically with hydrogen or with hydrogen and oxygen. Similarly there is no volatile matter in the original coal. That which we get out of the coal as volatile matter we make by disrupting the solid material and rearranging the atomic relations in such a way that some of these remain in the gaseous form.

A Hundred Years of Repetition

Now the order of these new arrangements admits of almost infinite variation and every order has its own peculiar property and value. Naturally, also, any of the changes in order cannot take place when the elements are in solid form such as exists in the natural coal, nor are any changes to be looked for in that portion of the material that remains in the solid form as coke. It follows, therefore, that these numerous interchanges of position must take place in that portion which is mobile, so to speak, that is, the volatile matter.

It is a little strange, I think, that in this zone of potential variations, considering the possible values involved and the readiness with which an almost endless number of changes may be brought about, that we have gone along for an even hundred years maintaining one single set of conditions and producing again and again the same brief list of products which also in many respects lead all others in inferiority as to intrinsic worth.

For more conveniently illustrating some of these characteristics let us refer to another chart wherein we may let the outer zone represent the first one hundred years of practice. The component parts, very briefly described, would run about as follows:

First: Water—A rather high percentage of it, say 8 to 12 per cent, in Illinois coals. However, in itself having neither value nor yet any harm except as it has to be included in the freight charges and paid for as coal in the final settlement for the raw material.

Second: Volatile Matter—With something over 5 cu. ft. of fixed gas to the pound to its credit, plus certain condensible products in the way of ammonia water and tars of somewhat indifferent value.

Third: Coke—Not always of a quality to excite enthusiasm on the part of users, but still a salable commodity if its properties and virtues were adequately set forth by propaganda methods.

Now the second zone is one of prognostication, of possibility, of research, possibly of new development and, let us hope, of some progress in accomplishment during the second one hundred years to which we are looking forward.

First: There is here also water, no better and no worse than before.

Second: There is the volatile matter, which, as we have already indicated, is the area of modification and of new possibility. It has been pretty well demonstrated by investigators both in this country and in England that under suitable conditions this area may be made to yield, first, and doubtless of co-equal if not of greater worth, not tars of the ordinary type, but more properly oils wtih an absence of inert and inferior compounds and a wealth of potential development and modification almost bewildering to contemplate—a hunting ground for the investigator without parallel in both interest and importance. For example, in volume it is fully double that of the tars as ordinarily produced yielding from 23 to 25 gallons per ton from Illinois coals and as high as 45 gallons from coals of the Eastern Kentucky type. Instead of a specific gravity of 1.2 these condensates may be produced with a specific gravity that scarcely reaches 1. They are, therefore, high in the lighter fractions, low in their pitch constituent, and carbon in the free state is practically absent. It is hardly necessary here to enlarge upon the advantages which may reside in this material. The simple enumeration of the qualities already given suggests features of possible interest to the dye and automobile industries, to the wood preserving interests, to road work, etc. But not the least in importance to my mind is the readiness with which these oils lend themselves to decomposition and rearrangement into other substances and other values. Studies in the field of such transformations have been greatly stimulated in recent years.

By-Products in the Kitchen

By way of illustration we might recall what has been accomplished in a different field but upon material having less susceptibility to change. The hydrogenation for example, of oil and fats such as cottonseed oil and lard has resulted in the production of other compounds of greatly enhanced value and popularity in the culinary art. Similarly it has been demonstrated that hydrogen may also be introduced into these oils or condensates from the volatile products of coal decomposition so that a door seems here to be opened whereby we may increase the amount of the lighter and more volatile oils. This retention or introduction of hydrogen into any compound lowers its specific gravity and also its boiling point, and these two properties are fundamental for that type of fuel upon which the automobile and air plane industry are based.

On the other hand, hydrogen as a gas in the free and uncombined state is rather poor stuff. We measure its heat value per unit volume, which is low, at the foot of the list, 326 B.t.u. per cu. ft. But kept in the fluid form it tops the list—over 62,000 B.t.u. per pound. For example, metaxylene has a boiling point of 139. If now we introduce hydrogen or substitute hydrogen for one of the methyl radicals we shall have toluene with a boiling point of 110. If we replace the other methyl by hydrogen we have benzene with a boiling point of 80. Just what the limitations are in this process of hydrogenation no one can now say. The field is too new for making even an intelligent forecast, but suppose the light oils of the benzene type which now show a yield of from 2 to 3 gallons per ton could be increased to 10. The potential motor spirit from the coal output of Illinois would be about one billion gallons.

If Scotch shales can be worked at a profit for their oil and ammonia alone where the oil content seldom exceeds 20 gallons per ton, why not Illinois coals with a yield of 25 gallons, with the ammonia as well as gas and coke for by-products.

Inducing Sulphur to Mend Its Ways

The above discussion, however, by no means exhausts the interesting possibilities which lure the investigator. I will only mention one other connected with this volatile zone and that is the behavior of sulphur. We know pretty well what its habits have been for the past one

hundred years. I believe that in some respects it could be induced to mend its ways. By proper handling, for example, a very considerable proportion of the sulphur can be induced to go along with the tar, thus lowering the amount left to distribute itself in the coke and gas. Then again, practically all of the sulphur which is going off with the gas leaves the coal at a temperature below 600 deg. Cent. The question at once arises could we fractionate the gas even from Illinois coals and draw a line between the first portion, which we might call sour or sulphur gas, and the next portion which is sweet or sulphur-free. The line of demarkation would come somewhere very soon after the first cubic foot per pound is discharged. Certainly some interesting possibilities connect themselves with these facts.

Have Only Touched the Fringe of Possibilities That Exist for Gas Engineer

I cannot leave this fruitful zone of volatile material without one further reference, and that is to the line of demarkation between the "rich" and the "lean" gas. As you well know this occurs somewhere along about 650 or 750 deg. Cent. I raise the question as to what is the good of the lean gas? To my mind it is more than a figure of speech to say of it "the game isn't worth the candle." It is here that the highest heat for the longest time must be applied, where both time and heat are vital operating factors. Then, too, "hydrogen" again is chiefly what you get out and certainly, here again, hydrogen in some other form or combination is worth more than when in the form of a gas.

Here is where the improvement in the properties of coke is to begin.

It seems to me, as it must to you, that we have only touched the fringe of the possibilities that await the persistent investigator in the field of gas engineering.

New York Gas Mains Play Their Part in Protecting Fighters and Their Burden Bearers from Poison Gases

Fifth Avenue Factory Turns Out Five Thousand Gas Masks for Horses a Day—Where The Gas Mains Enter

During the early days of the war, while the use of gas in battles was still in its infancy, clouds of gas could be detected long before they reached the fighting lines. Without much difficulty war horses could be hustled out of the way to a safe distance beyond the poison-gas range. However, as the Germans progressed they developed the use of gas in shell form so that the Allies might be caught unawares. As the shells exploded the gas filled the air and saturated the earth with its poison. Horses, it soon developed, could not resist the severe attacks, although they did not succumb as readily as did soldiers. And so it became necessary to protect the animal as well as the man against the poison.

The Fifth Avenue Factory

It was not long before American ingenuity had designed a mask which insured protection not only against the least deadly of the gases, chlorine, but against mustard and other gases, which the Germans never discovered but of which the Americans made free use. Gas masks became as much a part of the horse's as the doughboy's equipment.

In the lower section of Fifth Avenue, New York City, in a large office building, a plant of the Gas Defense Service was busy turning out a daily average of 5,000 gas masks for horses. Five hundred employees, mostly women, and many of them young colored women, cut, sewed and fashioned the cheese-cloth bags after they had gone through the gas-proofing process. In making almost half a million of these masks, which found their way into service since last March, gas from the New York Consolidated Gas Company's mains played an important role, as they did in many other war-work industries. The inner bag of every mask was placed in huge steam boilers and bathed in chemicals until the cloth was impregnated.

After the chemical treatment, the bag was removed from the steam boilers and placed into gas steam-drying boilers giving 1,000 pounds of steam at a ninety-pound pressure, the pressure required by the Government.

The horse mask, unlike that used by man, permitted the horse to breathe through his nostrils, thus doing away with many of the difficulties which soldiers encountered in learning to breathe through their mouths. Before the advent of the American-made horse mask, an English bag of flannelette was fastened over the animal's mouth during gas attacks. In two ways it was inferior to the American article—it gave protection chiefly against chlorine gases to the exclusion of others, and its ill-smelling finish proved so distasteful to the horse's sensitiveness that it hampered him and lowered his efficiency.

Horse Mask Attached in Ten Seconds

By a simple arrangement the horse mask could be attached within ten seconds. Rubber straps fastened over the nose and head between the ears and were held in place by automatic clamps. The bag, which slipped into the horse's mouth, covered only his nose, because, unlike a man's, the animal's eyes do not lachrymate and are not affected by gases. Knowing this, the soldier truck-driver could feel perfectly justified in attaching his own mask during an attack before attending to his animal.

According to gas-defense experts, horses enjoyed wearing American masks. They bit on the bag mouthpiece much as they would on a fodder bag and found it different only in not providing the accustomed grain. Oddly enough, the gas mask was peculiarly distasteful and annoying to mules and jackasses. With uncanny cunning they could sense an attack and balked at having the bag adjusted. Jackasses, especially, tossed their foolish heads and kicked furiously in an endeavor to unfasten the obnoxious protection.

For four or five hours the horse mask could resist the deadliest fumes, often retaining its efficiency at the end of a severe attack. Because of the comparative cheapness of the article, and the fact that it was made out of materials not needed for army equipment, a large supply of masks was always on hand. Even the knapsack in which the bag was fastened to the saddle when not in use conserved materials; it was made out of "leftovers" is discarded by the Government.—*Gas Logic.*

Finding the Way to Satisfy the Creative Instinct in Workers

Frances A. Kellor Tells Why Scientific Management Fell Short of Need and Why Welfare Work Has Too Often Not Been Worth the Investment

Exit welfare work in the industries of America, built upon benevolence, fostered by generosity, and supervised by industrial missionaries. Enter manpower engineering, established on identity of interest, charged to operating costs and responsible solely to the management, asserts Frances A. Kellor in the November number of *National Efficiency Quarterly*.

When we stop long enough to look over the great distances this war has enabled us to cover in readjusting our industrial relations, we realize that the day of the welfare worker has gone. When we struggle during reconstruction to separate and retain the basic from the emergency measures, we will see that he has served a useful purpose but has no future. Here and now, in the shadow of his passing, let us acknowledge the great service that he has rendered and pay tribute to the philanthropic and other agencies that have been instrumental in his installment. They have given employers much of vision and something of technique. They have been pioneers impregnable to trade unions and to government measures. They have been indispensable factors in breaking the shell of conservatism and of the individualism of employers, just as they have broken down many barriers of suspicion and prejudice among employees.

Industrial World Restless Under Welfare Work

But for a long time the industrial world has been restless under welfare work, under whatever name defined. Its returns have not generally justified the investment. Its experiments have rarely been correlated, systematized or properly inspected as a part of the plant organization. It has only in the rarest of cases been made a part of the functional system of management. The establishment of welfare work has often reflected a desire to temporize or to compromise rather than to deal thoroughly with questions of man power.

Causes of Failure

In some plants there is a far-reaching plan showing vision and capacity for execution; in others it consists of philanthropic makeshifts, conducted by outsiders and not related vitally to production. It has in well known instances been resented by the men and been treated with contempt by the employer. It has been a kind of camouflage for efficiency. It concealed the desire for increased returns in the foliage of bettering the conditions of the men—presumably for themselves.

Welfare work has been a well intentioned attempt to improve conditions without touching the basic structure of plant management any more than was necessary. No matter how unjust the employment methods, concentrating power of removal in foremen without a hearing, and basing promotions and transfers on personal preference, the clubhouse and playground and lunch-room were expected to remedy them. No matter how bad the housing, safety-first and first-aid were expected to keep the men in condition. No matter how inadequate the incentives and rewards, the fellowship club was expected to maintain the morale of the plant.

We still cling to welfare in industrial relations, because we are afraid of disturbing "letting well enough alone." We think of manpower as either labor or capital. We think of it not as a force but as a problem. We relate it persistently to our immediate environment instead of to America. The result is chaos in concept, indetermination in operating principles, and uneven if not wholly contradictory standards.

One of the most enlightened personnel managers was asked the other day how he rated the various factors in a plant in increasing output for the war, and he replied:

Sixty per cent is due to wages and hours making it possible for men to make themselves efficient; 25 per cent to management, enabling us to do things collectively that they connot do individually; 15 per cent to welfare, of which 5 per cent at least is of value chiefly in educating the management so that its credit should really be 30 per cent and welfare 10 per cent. And in the future the 60 per cent of wages and hours will be divided with co-operative management. We have about reached the deadline of what mechanical things will do and it is now the development of initiative and improvement of personal relations that we must master.

In the establishment by the government of a Federal employment service, in the installment of women matrons under government direction, in the appointment of plant production committees, in the creation of plant Americanization committees, in the appointment of community housing committees, in the training schools for employment managers and others, and in many other activities, is seen the necessity to increase production to win the war. Only the blind, however, have any idea that we shall return to the old industrial relationships and methods. The searchlight which the war has turned upon the whole industrial relations field and our disillusionment regarding "infallible American efficiency" means nothing less than industrial reorganization as a reconstruction measure. It means a new concept of efficiency made acceptable to everybody by bringing it into the open and conquering our dislike of it through changing the methods hitherto used to achieve it.

Plant Manager Must Shoulder Task

The kind of a meaning it will have will depend in a large measure upon the men who direct its new adventure, which includes also its rescue from an unpopular past. To be efficient in America has been almost a matter of reproach to the unfortunate possessor of the reputation. The persons most responsible for its future are plant managers. It is just at this point that the welfare worker disappears and the manpower engineer enters.

The employment manager, or personnel manager, or by whatever title the responsible man is known, who handles industrial relations in the plant, will be at a disadvantage in reconstruction and in meeting trade competition, if he thinks in terms of welfare, uses outside agencies to which the plant contributes, and introduces measures which have no logical development of the plant. He will be expending money and effort along

(*Continued on page 72.*)

Fuel Bill with Gas Only $57 a Month Higher Than with Coal in Carbonizing Installation, But Four Times as Much Work Is Turned Out and Labor Is Reduced by One-Third

These Figures Computed on a Basis of Coal at $5 Per Ton and Gas at 70 Cents a Thousand Cubic Feet — Details of the Installation and Points of Importance in Carbonizing

By E. A. PILNACEK

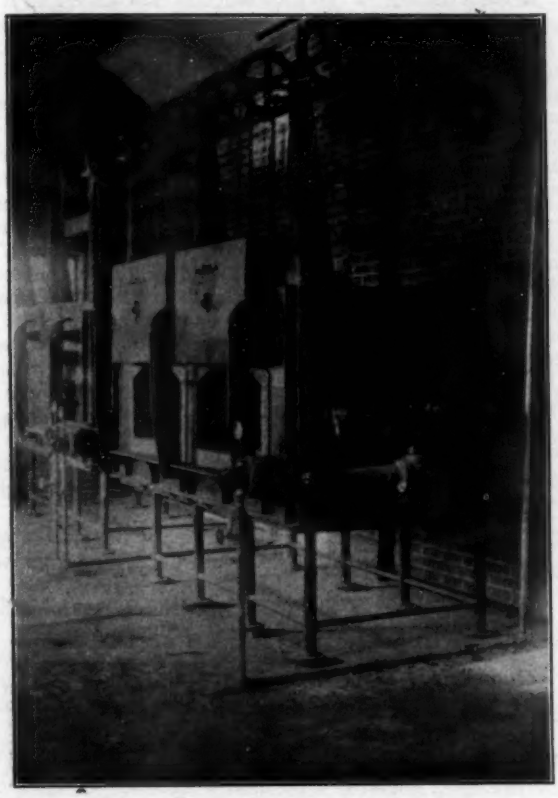

FIG. 1—GAS FURNACE AS INSTALLED

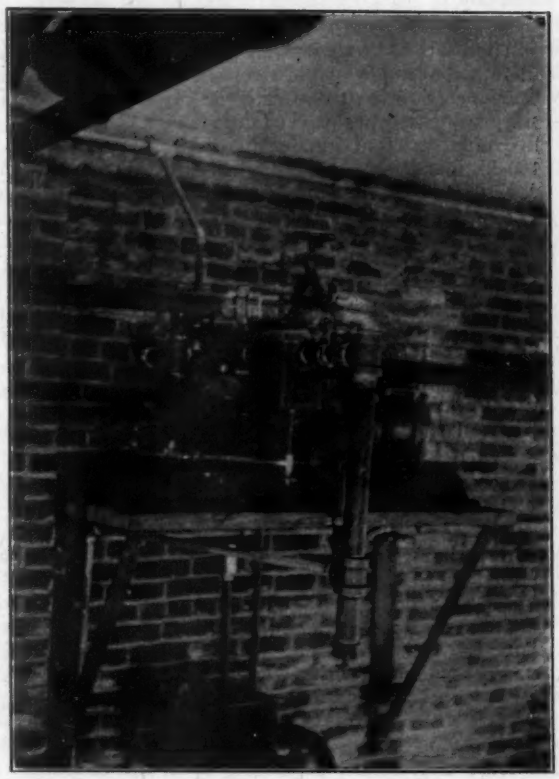

FIG. 2—SMALL DIRECT CONNECTED BOOSTER SUPPLYING FURNACE

At the plant of one of the country's largest manufacturers of automobile parts, and now doing government work, a carbonizing equipment was installed a year ago which has shown and is still showing remarkable results.

Previous to this installation a coal-fired furnace was used which required shutting down several hours every day for the cleaning out of fires. With coal at $5 per ton, the fuel costs averaged $130 per month. After running with the gas furnaces for several months with gas at 70 cents per 1,000, the fuel bill averaged $187 per month, with the following difference in operation: The gas furnaces were run day and night with two men on each shift, against fourteen hours a day and a three men gang on the coal fires. The gas furnaces are turning out four times as much work as the coal fires did under the above conditions, and take only one-half the room. They require very little attention, permitting the men to do other work, whereas the coal fire gang were busy the entire day attending their furnace. Fig. 1 is a photograph of the gas furnaces as installed and Fig. 2 shows the small direct connected gas booster supplying the furnaces.

GAS PRESSURE BOOSTED

These furnaces are of the double oven type and gas fired with tunnel arch burners. The burner system is the Surface Combustion Company type, including the high pressure one pipe, one valve control. A small

rotary compressor boosts city gas from line pressure to ten pounds per square inch gauge. This high pressure gas enters a patented inspirator which proportions the amount of air and gas. This proportion is kept the same at all rates without the aid of any moving parts or governors, thus eliminating chances of shut down. The inspirator supplies the burners with a perfect mixture, and the amount of mixture burned is controlled by a small needle valve.

The furnaces themselves are lined with a fire brick of the best grade obtainable, backed with heavy insulation. This brick setting is enclosed in a heavy cast iron casing, set on a substantial pipe base with welded braces. The heavy cast iron doors are also lined with fire brick and insulating brick, counterweighed to lift very easily and clamp automatically at the lowest position, making the furnaces tight and eliminating cold air leakage.

Parts to be Treated Packed in Pipe Retainers

The parts to be treated are packed with solid carbons in retainers made of old five, six and seven inch pipe. One operation has to do with the carbonizing steel pins, sixty of which are packed into a 5 x 37-in. pipe and five pipes are put into each oven. This totals up to 105 lb. metal to be treated. The pins are held at 1,700 deg. Fahr. for five hours, in which time they attain a ⅛-in. case and 900 cu. ft. of 580 B.t.u. gas are consumed. Another charge might consist of ball bearing races of low carbon steel weighing 3½ lb. each. Ten of these are packed into a 7 x 36-in. pipe and three pipes are put into one oven at a time. This charge figures out as 105 lbs., the same as in the previous case. The furnace is then held at 1,700 deg. Fahr for 20 hours, consuming 3,600 cu. ft. of gas. At the end of this time the parts have a case ⅛ in. deep.

The most important factor in favor of the present gas furnaces is the superiority of their product over that of the old coal fires, due to uniformity of temperature and ease of control.

Important Points in Carbonizing

In carbonizing, medium and low carbon steels are treated with carbon in such a way as to leave the skin with a high percentage of carbon, while the core of the metal remains as before with a low carbon percentage. This gives the metal a good hard wearing surface combined with a tough inner core.

The process consists of heating the metal while in contact with carbon (either solid or in the form of carbon monoxide) to a temperature of 1,500 deg. Fahr. to 1,700 deg. Fahr., depending upon the character of the work, and holding at the required temperature for a certain length of time. The latter depends upon the depth of carbonization desired. For good results the work must be heated evenly, otherwise some parts would carbonize quicker and deeper than others, causing warping, and increasing the chances of cracking while in use.

To heat the work evenly and control its temperature is the secret of success in carbonizing. This can only be done in a well designed furnace having the two essential characteristics of even heat and control of same

To meet the requirements of such work the Surface Combustion Company of New York City has been manufacturing a special line of furnaces of which the foregoing is typical. The success they have achieved in operation is convincing proof of the value of gas in carbonizing work.

Finding the Way to Satisfy the Creative Instinct in Workers

(*Continued from page 70.*)

lines where he cannot gauge results, except in generalities. He will be constantly expanding to meet emergencies and supplying expedients without ever touching the causes.

The employment manager who sees his work in terms of engineering—as impersonal, as accurate, as just, and as co-ordinated, as are all engineering projects—will build a theory and practice of industrial relationships which will weather any strain because it will be basically right.

As a great international nation we must have a policy worthy of such a position. The industries must themselves establish it. We cannot ask the government to do the job for us. What, then, is the matter and where is the remedy?

Little Agreement on Fundamental Questions

We have first of all no philosophy of industrial relations. In any gathering of business men dealing with subjects of production and its costs, sales and markets, and combinations on materials, there are certain general lines of agreement. There are many differences of opinion as to ways and means, but all of the confreres speak the same language. On the question of manpower there has been no such common agreement. In fact, a few years ago, it was conspicuous by its absence from most conference programs, and there was little agreement on fundamental questions. There is the man who thinks the industry inherited from his father is his own personal concern, and that the way he treats his men is his business. Opposite to him sits the man who has co-operative management in his plant.

There is the man who thinks everything from the granting of a job to the company house and company store is the business of the employer.

Next to him is the man who thinks nothing but hours and wages is the business of the employer.

There is the man who believes his plant should do certain things, and that the town and himself as a taxpayer should do other things, and that there is a sound principle determining the relations of the two.

Satisfying the Creative Instinct

There is the absentee owner who lives in another town and pays his taxes and has his social relations elsewhere and thinks the mill town can take care of itself or go to the devil and that he has no responsibility toward it.

There is the man who thinks that pensions and bonuses and insurance are sufficient incentives and that workmen who do not respond are ungrateful.

His neighbor is the man seeking to satisfy the creative instinct in his workmen and to bring out identity of interest in his plant.

The man who argues for a highly competitive system of handling men is contradicted by the one who finds a highly co-operative system more successful.

There are men who think lunch-rooms and baseball teams and clubhouses essential to morale, and there are

others who still look askance at spending money for safety-first and first-aid to the injured.

Some think that all races can be dumped indiscriminately into a plant and be made to forget old-world differences, while others are seeking a knowledge of racial relations to get a sound morale.

Some men think there is no limit to what concessions in wages and hours will do in crises; others as clearly see a dead line in their usefulness.

Some men think benevolence has a place in industrial management; others think everything should be charged to the cost of production and be accounted for in measureable terms.

Lack of Broad Thinking

None of these questions has a national solvent. Nowhere is there emerging any philosophy which establishes from the mass of individual experiments and beliefs any working hypothesis applicable to industry as a whole. Nor are there any accepted methods recognized as intrinsically sound, regardless of varying superficial conditions, nor any standards which are unassailable. Even to the war measures, so illuminating, one group is steadfastly turning its face in opposition to their retention, while another seeks to make them permanent.

One of the greatest detriments to the evolution and acceptance of manpower philosophy is the American attitude of mind. Every employer assures you that his conditions are different; that he must meet his conditions by some special patent medicine compounded by himself, which is no more true than that he must produce his output by machines which no one else can use, or market his goods by secret processes all his own. Men are now willing to discuss in conference questions of production and sales and to proceed in unison, but we are just reaching the point where they are willing to do this openly regarding manpower.

Mistaken Notion of Scientific Management

We have, in the second place, made efficiency stand for a cold, mechanical think. It has not touched the spiritual or social strings of action in men. Scientific management has somehow in our minds become a question of saving material and of eliminating waste motions.

Mr. Taylor gave employers two valuable things, among perhaps others. He directed their attention to waste in men and in their handling of material, and showed that their energy was subject to definite laws, as, for instance, the relation of fatigue to output. He also shifted the burden of attaining efficiency from workers to managers.

His disciples, however, instead of clearing the field and evolving a workable philosophy and a scientific application of principles of operation, have up to now hopelessly confused the field.

Mr. Emerson, for instance, states the twelve principles of efficiency to be as follows: Clearly defined ideals, common sense, competent counsel, discipline, a fair deal, reliable records, dispatch, standards and schedules, standardized conditions, standardized operations, standard practical instruction and efficiency rewards.

Men Subsidiary to Production

Any plant attempting to secure efficiency solely by these principles would of course fail. Among other things they lack co-ordination. Reliable records and schedules are not in the same category with ideals and a fair deal. A fair deal is both an ideal and common sense. They present no philosophy, and where it can be inferred it is hopelessly confused with procedure. They give one the sense that men are subsidiary to production rather than that they are the creators of wealth for the use of men.

The reaction of the average man engaged in a vital hand-to-hand struggle with manpower to such a concept is that he can get better results from the factory clock than from a stop watch; from standard working conditions than from standard operations; from the elimination of waste emotions than from waste motions. He thinks a comprehensive knowledge of the living conditions and their common sense relation to output will take him further than records and schedules. He has an uncomfortable sense that he is being asked to put up a cupola before he gets a foundation.

Getting National Spirit Into Industry By Way of Stopwatch

We cannot get the American spirit into industry by way of the stopwatch. That spirit is carrying American soldiers singing as they go over the top westward and we know them to be efficient fighters. Somehow we must wrest from this war the secret of that success for the industry of the future. It has revealed that the man at the bench yesterday whom we thought a slacker and an insubordinate had the art of workmanship, that he had capacity for discipline, faith in leadership and loyalty to his cause. We cannot say it is due to the military system, for of that he has had but a few weeks. It lies somewhere latent in the man himself if we can but open the door for industry as it has been opened for war. The present concept of efficiency as set forth by scientific management exponents will not give it to us. Welfare work, haphazardly administered as an adjunct to industrial relations, will not give it to us. It is for us to find what will.

It is of course inevitable in a narrow, scientific management concept that we should have neglected to develop identity of interest in industrial relations. Nowhere is this more graphically displayed than in our treatment of the immigrant workmen—our chief reliance in the industries most important to this war, and in our mines. Incentives and rewards which are the basic factors of identity of interest cannot be wholly summed up in higher wages, shorter hours, and in bonuses and pensions. Granted that wages and hours must be just and right, no wholly material considerations will establish sound industrial relations. We must find a way to satisfy the creative instinct in men; we must find a way to give them a share in management; we must establish a personal relationship based upon understanding and community of interest, with co-operation as its keynote.

Desertion of America By the Foreign Born

Why is it that we will have a desertion of America by the foreign-born at the close of the war? Lack of

identity of interest. We have taken the races of the old world, wise in many generations before us, simple in the very richness and elaboration of their culture, grounded in the elemental ethical qualities, in spite of oppression, and have pressed them ruthlessly into our industrial machine. Their tests of us are mercilessly simple; their judgments are unerringly sure. We stand or fall, not by what we profess, but by what we do and the orders we give within the factory gates. The immigrant workman cares but little for the Declaration of Independence and the story of the Revolution unless it squares with the day's work and gives him just treatment along with every other man.

Somehow, it has to keep out the profiteer, give him a hearing, enable him to collect his wages and prevent his eviction from a company house, to give him a vital interest in America.

The Constitution is a meaningless thing so long as he is herded across the railroad track or sleeps in a bunk house and has a check instead of a name.

He does not understand platitudes on political liberty when he holds his job because of the way he votes and the backroom of a saloon where the I. W. W. holds forth is the only place where he can express his grievances.

When he sees garbage collected in the American section of the industrial town every day and in his own section once a month, he somehow gets back to the idea that the American job master is to blame for it. The assertion that every man is the equal of every other to his mind means mutual respect and consideration, and when his foreman calls him a "guinea" or a "wop" it does not square with ideals nor improve the morals of the shop.

Part of Personal Relations in Manpower

The American business man, bent on efficiency and dealing with large questions of trade organization, wages, hours, etc., scarcely realizes the part that personal relations play in manpower and how often his dreams are negated and his schemes defeated by some seemingly trivial thing, but which is vital because it is really basic.

This brings us to the fourth consideration of what is the matter with American efficiency. We have the American mind, with its inventive genius, incorporated in American industry. We have not yet got the American spirit, with its interpretative personality into the hum of our machinery and into the organization of American business.

The conglomeration of principles outlined by Mr. Emerson nowhere reveals this spirit—with its vision, its determination, its courage and its faith. The simplest definition of efficiency is doing a thing right the first time. Men individually must be able to do this, before the management colectively can turn out the product which expresses. Therefore, we have to seek it first in men and then in their relation to each other in plants.

Indispensable Personal Elements in Efficiency

The personal elements in efficiency which are indispensable, though by no means exclusive, are average physical strength and co-ordination, initiative, incentive, loyalty, integrity, courage and self-determination. These are not to be imposed but are to be developed. They are to be preferably voluntary. It may be said they are indefinite and that the quality varies with men. They are as reducible to operating terms, and even more so than are "clearly defined ideals," "common sense," "competent counsel" and "a fair deal," which have been postulated by Mr. Emerson.

We can correct much of the loose thinking and haphazard experiments that have resulted by consciously developing these qualities, and the best way to begin is to examine ourselves and see if we are practicing them.

Men are efficient in proportion as they have these qualities developed, balanced in relation to each other, and are given the opportunity to use them. The war has shown us that these are the enduring qualities for success.

It is therefore the responsibility of the manpower engineer and of the training which produces him that he be able to practice what he preaches and to conserve or to develop these things in the handling of manpower. Can we find a way to get a fuller expression of these qualities into our industrial relations?

Self-Determination the Highest Sense of Discipline

Initiative in production means that a man has a creative instinct desiring expression either in making something or in enjoying the rewards. The plant that finds a way to satisfy this has taken a long step toward efficiency. Loyalty means nothing more nor less than dependability and there must be an ideal as well as an idea in industrial life to secure it, otherwise it degenerates into mere bargaining or personal following which is but a bait to a higher bidder. The plant that supplies the ideal as well as the idea has the approach to loyalty. Self-determination is the highest kind of discipline. It is imposed from within.

The average employer knows that from the last analysis the man who meets a crisis with him is the man who can see the facts, who can relate the immediate situation to the larger issue, and who has the self-determination to stand by his vision, and not the man who goes with the mob upon every fiery pretext.

In its last analysis the industrial unit will be efficient just in proportion as each human unit in it is efficient. We have long evaded this truth. Through our wealth of raw material which we could afford to waste; through our inventions which obscured the dangers; through our immigration which blinded us to the necessity for conserving manpower, we have blinked our straight path of duty, which is to develop to the utmost the personal qualities in men which make for personal efficiency. We have said to ourselves: Why develop skill when two men cost us no more than one? Why develop incentives when we have one hundred men in line outside of our factory doors every morning? Why bother with loyalty when we have enough margin to raise wages whenever a "situation" demands it? Why talk about discipline when we can afford to close down or import strikebreakers?

Giving Dignity to Work

Do we believe, for instance, that skill is doing a thing right the first time, and do we measure handling manpower by the resulting gain or loss in each single operation? Do we believe that initiative is thinking or

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As the Journal Views It

An Admission of Incompetence

It has an offensive sound, that expression. Yet it is not infrequently heard. One man has uttered it in our presence three times within the past two years.

"Well, I've *made* them raise me again."

It should be regarded as a failure in managership to be compelled by the employee to increase a worker's wages or compensation.

If his work is worthy of such reward the increase should have come before he had voiced his demand for it. If it is not, he should have long since been discharged.

The manager knows, or should know, his men. He knows what men are justly entitled to increased remuneration. Not to give it to them is an admission of weakness.

He also knows those who are not entitled to an increase. That they are merely worth what they are now getting is not, in nine cases out of ten in gas company work, enough.

An organization is but a group of individuals at the best. If the individuals are not progressive the organization cannot be progressive. The man who can go no higher, in the general sense, has no place in the gas company's ranks. Not to have discharged him is likewise an admission of managerial weakness.

We thus find there is no basis for the employee—compelled increase in wages. In the case of the man

we cited there is evidence that his management considered him, on three different occasions, worth more than he was getting. Not to have given the increase to him voluntarily was in effect dishonest and a failure to realize an increased effort from an increased wage.

A wage increase that is compelled has no favorable effect on the employee. A wage increase that is deserved and has been given voluntarily enhances his good-will and confidence towards the company and stimulates his efforts.

Age

Our business department has shown us a letter that, were such unusual with the AMERICAN GAS ENGINEERING JOURNAL, would be unique. It reads in part:

"Our advertisement has been in your paper long enough to be of age, without a word of it having been changed—it has stood this way about nineteen years.

"Please change it for the time being to form stated below."

The letter is signed by Jno. Dell, president of the Missouri Fire Brick Company.

It is such reminders, coming from time to time, that keep before our mind constantly that the JOURNAL is not a thing of but to-day, to be directed and managed as such if we so will, but an institution, to be directed and managed as a trust. Such reminders by keeping before us traditions of the past, check possible tendencies to self-conceit and the magnification of one's own part and importance to the welfare of the JOURNAL.

Managers there have been, and editors. The majority left behind them their stamp on the character of the JOURNAL and vivid memories in the gas field. Those of us who now direct in the various branches of the JOURNAL'S activities did not create and will not complete. We merely carry on and, we hope, we build.

Each, as he came to this place, found the structure prepared; did not have to strive for prestige and for friends, but found them ready at hand.

Such reminders as letters like Mr. Dell's are an inspiration, a compulsion might well be said, to better efforts, higher ideals of service to the field, more rigid adherence to the ethics of journalism.

In the years his company's advertisement has run without a word being changed, various managers have managed, various editors have edited. Each was influenced by the works of his predecessor; each, after his individual lights, strove to continue building.

From the period when an arch of open flame burners at a centennial exhibition was sufficient as a wonder of artificial illumination for the JOURNAL to feature it with almost vaunting acclaim, and a full-page width woodcut, to the time when the illumination by gas of the boardwalk of a showplace seaside resort only stirred it to the point of almost prosaically describing the installation, is a big stretch, a stretch eloquent of the changes the JOURNAL has seen transpire in the gas industry throughout its extended history.

To have kept in touch with them, to have progressed with events to the extent that its place has not varied in the industry since its founding, would not have been possible for the JOURNAL of its own efforts alone and through the abilities it could purchase.

Running a gas plant and running a gas journal are different undertakings entirely. Yet the man who runs the gas plant and the man who runs the gas journal are mutually dependent.

Neither can attain his best possible effectiveness without the aid, counsel and assistance of the other.

Throughout its history the JOURNAL has been fortunate in the friends it has had. Whether or not these friends have been fortunate in their journal it would be out of place to state in these columns.

No managership and no editorship that the JOURNAL has had has been one hundred per cent perfect in the works it has wrought, in the ideals it has set for itself, in the viewpoints it has expressed. To have been so would not to have been human.

Not to have tried to be, likewise, would have been impossible. With tradition behind him, constantly goading him to higher endeavor, even the shirker cannot be quite as much of a shirker as he might be, were the ghosts of the past not there to remind him.

Given even mediocre managership and mediocre editorship, the JOURNAL could not fall far behind. The atmosphere they would labor in would, in itself, vastly augment their powers.

Finding the Way to Satisfy the Creative Instinct in Workers

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doing a thing without waiting to be prodded or do we wait for prods to our own lazy minds and "let George do it" action? Do we believe that an incentive is a combination of interest and reward which the creative impulse and pride of achievement in men, as well as the comforts of men, shall have place? Do we believe that loyalty is the great eradication of friction and waste and do we establish our relations so with our fellow-men as to win it? Do we believe that integrity, which is the symbol of why men take each other's word, act upon each other's advice and stand by each other in crises, is worth achieving in ourselves and have we a standard of truth and courage and honesty which are indispensable passwords? Are we able to stand cool in the heat of battle, silent when invectives fly thick and fast and to work together in good faith, each doing a small or big bit as the task requires? Among other things it is for us to find a way to give dignity to work of whatever kind it may be; for us to foster the respect of workers for each other, and for us to restore the art of workmanship to tasks in which men rarely see the finished product.

The men who read this know that the old days are over and that a new order has come, and the successful man of to-morrow is the one who sees it and is going about setting his plant in order.

A New Order Has Come

Fundamental as this task is the manpower engineer cannot stop here. However personally efficient each man may be we get our results from combination of men, and through their relationship these qualities are developed and conserved, or stifled and destroyed. Just as there are indispensable personal qualities of efficiency so there are corresponding indispensable corporate qualities of efficiency which all leaders must have in order to weld together in organization these highly efficient personal elements. They seem to be personality, vision, equity, co-operation, co-ordination and conservation with regard to manpower. To the engineer handling manpower these must be developed in combination of men to secure production. These are to be emphasized because in management our minds turn so readily to materials, machines, offices, salesrooms and shipments. We shift our gaze to furnaces, ledgers and balance sheets and are likely to forget that there are corporate principles of efficiency as elemental to success as are the personal elements.

Labor Turnover More Than a Plant Problem

I cannot see how we can obtain corporate efficiency until a man has the power to see beyond his factory door, his home town, and, eventually, his home port.

Let us take as an illustration the labor supply. It was not until the war came that America aroused itself from the enormous waste in employing manpower. The narrow competitive system of every man for himself —get ahead of his neighbor—was at its height. Employers insisted that who they employed and how was their own affair. Then someone discovered labor turnover and that for every new man employed the cost was $35 and upward—sheeer waste and with no return. Then they discovered that labor turnover was an inter-plant matter and an inter-city matter. Men began to think that they better get together in the town and talk it over and let the grass grow on the paths worn between the plants made by men exchanging jobs. Then they figured the cost of bringing in new men to the town in facilities and order and housing when they had a latent supply that lived at home and might be interested, and they saw that changing men is not only a plant but a community problem and a State matter. Then the war showed them that they were no longer isolated units but linked up with the industries of the world. The facts have been at their doors for many long years but the lack of vision prevented their seeing it.

We are much in the same position in regard to Americanization. The average employer will tell you that if he is teaching English and Americanizing his own men he is doing his bit. I am of the opinion that he is doing more than his bit in a very expensive way because every time he gets a new man (and he gets many) from a plant that is neglecting Americanization, it increases his liabilities and costs. We shall see sometime that standards are things that men build together, first within their plants, then co-operatively beyond their plant doors, and that what comes back to them from their own gift is frequently more priceless than their own effort and achievement. We have become a nation in this war, and though we shall struggle for a long time (perhaps until the men come back from the front) with the desire to spend our money at home on our own enterprises where our friends can see the result, we shall eventually follow the Liberty Loan and Red Cross spirit and find men doing for all industry what they once were content to do for themselves alone.

Equity a Principal of Corporate Efficiency

A second principle of corporate efficiency is equity. It is something more than Mr. Emerson's fair play. There is no simpler definition of efficiency than the absence of friction. Curiously enough inefficiency generally has its root in basic conditions rather than in the immediate relations of men. When the plant was built someone forgot to see that there was a good ventilating system and enough light; someone neglected the water supply, someone overlooked the safety devices; someone thought lavatories and dressing rooms took too much room; someone guessed a lunch room a few blocks further away wouldn't make any difference. Then the best architect available planned the buildings and good builders put them together; but nobody planned the town and nobody thought that bunkhouses and boarding houses without gardens would be plenty good enough. And not having these things, men couldn't see any way of resenting this neglect or of expressing their aspirations than by asking for more wages and when these were as high as they could go, they moved away when they got these plus other things. Then some men saw the truth and committed the fault of confusing justice with benevolence an dtried to give men what collectively they should have given themselves, like baseball teams and parks. Then they labelled dressing rooms and lunch rooms welfare instead of efficiency and the circle was complete with a hole in the middle.

The Hole in the Middle

The hole in the middle was the last thing the employers wanted to touch—the management of the plant itself. When I began my work with the industries my first suggestion was a plant analysis to determine equitable conditions. Were men employed, promoted, transferred and dismissed in an equitable way? Did they have a hearing? Could the foreigner get to the grievance committee if there was one? Could he get things out of his system in the plant or did he get them out in the back room of a saloon where an I. W. W. listened to him? Were voluntary layoffs followed up in any kind of an intelligent way or was he just "paid off"? We are still in the state of mind where men would rather "let things drift along than precipitate something," hoping against hope, against the inevitable day of reckoning which has now come.

Co-ordination and Co-operation

Co-ordination and co-operation are inseparable elements in corporate efficiency. We have fallen into the error of thinking that all agreeable association together is co-operation and that likeness of product is the basis of co-ordination. Can men really co-operate without identity of interest and similarity of purpose? There must be some fairly constant qualities to insure team work. When we think how continuously and painstakingly a lot of boys are drilled in not only skill but

in spirit to play football we get some idea of what team work in a big industry must come to mean.

Can the skilled workman co-operate with the unskilled in a delicate task? Our relaization that he cannot has brought up a new term, the dilution of labor.

Can the man with initiative and incentive co-operate with the man continually needing prodding?

Can the loyal and disloyal reach understanding agreements?

Can the man of his word co-operate with the man who breaks his?

The enlightened industry handling its manpawer efficiently and equitably finds it difficult to co-operate or to combine with another that does not.

The man working for his country finds himself at a temporary disadvantage with the profiteer.

The absentee owner has a different point of view from the resident owner.

Where the standards of action vary too much men *associate* together but they do not co-operate.

Aside from its value in winning the war introduction of the dilution of labor is a permanent efficiency factor.

It opened men's minds for the first time to the possibility as well as to the necessity for real co-operation. It means that the 100 per cent efficient factory shares enough of its skilled workmen with the 50 per cent efficient factory to make both 75 per cent efficient. The ability to carry this over as a permanent value is one of the interesting reconstruction questions.

Have Passed Safety-First Goal in Industry

We have attempted too much under co-ordination—a last word in corporate efficiency. Here again there must be minimum standards of organization, leadership and financial resources. We cannot obtain efficient management by attempting to co-ordinate departments or plants of too unequal strength or too wide a variation in methods. They must be very nearly on on the same plane. Where these essentials have been ignored, the results have been disastrous.

We have passed the safety-first goal in industry. We are on the threshold of conserving manpower. We have to and the American does what he must unfalteringly. Safety-first was aimed at reducing conspicuous casualties like the loss of arms and legs and eyes. We now realize that efficiency is a matter far more subtle, and that it is inexplicably related to the happiness and worries of men, and to the places where they live. From industrial concern, we now find that community diseases due to bad housing and bad water supply and failure to collect garbage, affect the smoothness with which the plant runs and the amount turned out. There are a few, regarded still as Utopians, who tell us that the elimination of noise and ugliness will play a large part in future efficiency. It may well be so, in the light of the experience of England, where it was found necessary to put people through gradual processes to adjust them to the noise in the munition plants and so avoid nervous collapses.

Without a Philosophy in Our Industrial Relations

It is plain that if we are without a philosophy or a science of operation in our industrial relatians, and if we have not yet put in the American spirit upon any large scale, that we have a long way to go in adequately handling the manpower of America.

It will be a good deal of a task to lift it out of the field of controversy so we can examine it impartially.

In the reigning confusion, where old methods and beliefs are being overturned and new and often unrelated and half-thought-out theories are being tried, there is no answer to many of the questions.

But while we are experimenting and compromising to expedite the war, we should steadfastly set our faces in the direction of formulating a philosophy—not a policy—as England is doing.

We should set ourselves the task of training the manpower engineer and not be content with emergency measures; we should be at work nationalizing American industry in its handling of manpower to meet the scrutiny of the world, as an international power.

Europe will no longer think of what is done in Texas or Colorado as being a State matter.

We have become in this war an international power. We are to present a consistent ideal and achievement without division of disagreement. With the tremendous remigration of peoples, it is to our honor that we should act so that our returning immigrants will not give inconsistent accounts of our handling of manpower.

Manpower Engineer the Man Who Will Lead

We cannot go about this too soon nor too thoroughly. The man who will lead us in the promised land will not be the capitalist or the labor organizer. He will be the manpower engineer. He is the man of the future. We now call him by various names because we have as yet in America no philosophy of our business relations and no science in our operations. The war has not yet given us men of the type which England is using in her control of industry. The industrial engineer, the industrial councillor, the efficiency engineer, the welfare manager will gradually consolidate into the manpower engineer. We may follow England; we shall probably not have the distinction of installing the first course of training which will be broader and more scientific than the emergency schools we now have. We shall probably not grant the first degree, but we are driving fast toward the day when the handling of the working relations of men will be the science of manpower in the hands of trained engineers, administered as part of the cost of production, charged to operating expenses and eliminating for all time benevolence and irresponsible outsiders.

Our first duty is to analyze the various methods of handling manpower, and to evolve from them the principles and methods which are uniformly getting the best results. We will then take these and see whether they meet the best thought and action internationally and have any contribution to make to international trade conditions. For this there should be constituted some central industrial research organization or use of an existing engineering or other organization to take up such facts as the location of industries, town planning, equipment of plants, housing, methods of handling manpower, racial relations in plants, human specifications in contract prices, health, training, etc., and to evolve both a philosophy and a procedure.

Second, we will select typical industries to be used as laboratories in which these and other untried methods can be given a real test before men invest money

in useless experiments disrupting relationships and branding things as failures or successes which may be local or dependent upon peculiar leadership. These experiments will be made with the full co-operation of all the people in the plant.

Third, we will select typical colleges and develop manpower engineering courses to give us trained men to handle this question and we will see to it that all engineering courses have added to them courses on manpower. The man who handles these questions at the crucial point of operation must be the scientifically trained neutral engineer.

Fourth, we should be holding throughout the country in our industrial communities conferences dealing with the presentation of the conditions in that city in the industries and which will take up a consideration of the definition and separation of the things which are properly the responsibility of the industry and what belong to the city to replace the confusion and duplication of effort now taking place. Labor and industry should unite in discussing the mutual questions.

Fifth, the relations of the many nationalities in their working environment and the resulting adjustments necessary should be made the subject of consideration and action by plant Americanization committees. It is an intricate and difficult part of plant management requiring the co-operation of foreign-born leaders as well as of native-born Americans.

Cannot Absolve Plant From Putting Its Own House in Order

Lastly we cannot absolve the plant from putting its own house in order, which should begin with a thorough analysis of every phase of handling its manpower, resulting in the installation of a manpower engineer to put all of its work on a production basis with as thorough a plan of operation as functional management. It should immediately correlate its methods with that of the whole industry of which it is a part, define its relation to the community and carry out its responsibility, the while it insists that the town shall do its part.

We shall thereby pass from a productive leadership t oa constructive leadership in industry which is the highest production, because all men engaged in it will understand its aims and will sympathize with its methods, which is its contribution to the national life.

B.t.u. Standard in Indiana Must Come Down

Chief Engineer of Public Service Commission Styles High Standard as Waste of Coal

"There is no doubt that the B.t.u. standard of gas supplied in Indiana must come down, due to the higher cost of gas coals, increasingly inferior grades of gas oils, which are now in increasing amounts being cracked and sold as motor fuels, and further, the demand for the conservation and economic use of fuel," says Harry A. Garman, chief engineer of the public service commission of Indiana, in a paper presented yesterday before the Indiana Engineering Society, and the American Association of Engineers, at the Claypool Hotel, Indianapolis.

The gas plants were sorely pressed by shortage of labor, zoning of coal, poor gas coal substitutes, high prices and—Mr. Garman asserts—poor managements. As they put it they had to pay more for dirt than they used to pay for coal, and dirt will not make good gas and decreases the output of the benches. New gas standards are now being developed in collaboration with the U. S. Bureau of Standards. Field tests will be made by the Bureau and the Commission, beginning February. The first tests will be run at New Albany, Huntington, Fort Wayne and Crawfordsville. The B.t.u. standard for Indiana is now 600 per cu. ft., but few plants were able to maintain it and furthermore, it seems to appear that the consumer will be able to get better service and more service per one dollar with a lower B.t.u. standard than 600, that is to say, the evidence seems to indicate that the utility will be able to furnish the consumer more B.t.u. per one dollar with a 585 B.t.u. standard than with a 600 B.t.u. standard. The tests which are to be run, however, will throw more light on this point.

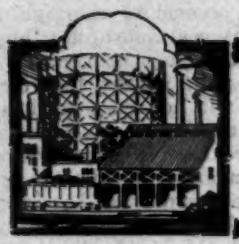
The gas consumers of Indiana are supplied with carbureted water gas, coal gas and coke oven gas, some with one, some with the other and some with admixtures of all. There is no doubt but that the B.t.u. standard must come down, due to the higher cost of gas coals, increasingly inferior grades of gas coals, the scarcity and high prices of gas oils which are now in increasing amounts being cracked and sold as motor fuels and further the demand for the conservation of and economic use of fuel. To maintain a high B.t.u. coal gas standard cuts down the gas output per pound of coal and increases the coal cost per 1,000 cu. ft. of gas made. If the B.t.u. standard is reduced, the gas rates must be reduced in an amount commensurate with the standard. The gas utilities now find themselves compelled to use indefinitely an entirely different coal supply from what they were using before the war.

Holyoke Municipal Plant Has Successful Year

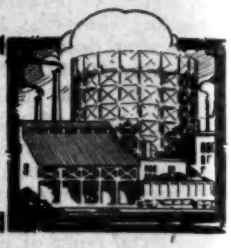
City Auditor Daniel W. Kenney has filed with the board of aldermen reports on his audits of the accounts of the municipal gas and electric department.

The receipts of the gas and electric department, omitting duplications, totaled $815,342.41, an increase of $70,002.46 over 1917; expenditures, omitting duplications, were $841,591.71, an increase of $63,704.60 over 1917. Out of receipts payments were made as follows: Appropriations to city, $20,000; interest on gas and electric debt, $35,747.50; payments on gas and electric debt, $56,500; gas plant extensions and renewals, $8,307.60; electric plant extensions and renewals, $21,059.43; operating expenses gas department, $303,657.70, increase over 1917 of $9,337.91; operating expenses electric department, $396,319.48, an increase of $75,934.57 over 1917.

The report says: "High as was the cost of things needed for production in these plants in 1917, the year 1918 saw them go still higher. There were no bonds issued nor money borrowed for the plants. The plant account shows a book value for the gas plant of $892,308.60 and for the electric plant $870,232.65, a total of $1,762,541.25. The outstanding debt is $896,500, and the excess value over indebtedness is $866,041.25.



NEWS OF THE GAS INDUSTRY



Southern California Company Wants to Supply El Segundo with Gas

The State Railroad Commission recently received an application from the Southern California Gas Company for a preliminary order relating to the issuing of a certificate of public convenience to enable the company to proceed with its plans to sell gas to the city of El Segundo, Cal.

Brooklyn Union Company Closes Contract for 1919 Supply of Oil

The Brooklyn Union Gas Company has closed a contract for its 1919 supply of water gas oil at 7½ cents a gal., an increase of a cent a gal. over the 1918 price. The company uses approximately 80,000,000 gal. of this material annually. With the added cost of $800,000, at 7½ cents a gal., the company will pay about $6,000,000 for this year's oil.

Gas Appliance Store Succeeds City Gas Appliance Department

The Gas Appliance store at 114-116 College Place, Norfolk, Va., successors to the gas appliance department of the City Gas Company, has the unusual distinction of being the largest exclusive store of its kind in the South.

H. J. Hicks, the owner, has in the short time he has been in business, established himself for the quality of the appliances sold and the service rendered. Such well known ranges as the Vulcan, Oriole and Estate are sold, Lion and Pittsburgh automatic hot water heaters, radiant-fire heaters and appliances of every description. The corps of efficient mechanics adds a great deal to the service department of the Gas Appliance store, insuring a prompt service that is of wonderful benefit to purchasers.

Earnings of Dallas Gas Company

Total sales of the Dallas (Texas) Gas Company for November amounted to $94,849.82, an increase of $29,084.07, or 44.22 per cent over the same month in 1917, according to the figures obtained from the monthly report filed with the supervisor by Grover C. Bland, chief accountant.

Gas purchased from the Lone Star Company for November amounted to $63,090.59, an increase over the previous year of $19,304.60, or 44.09 per cent. Operating expenses in November were $14,919.35, an increase of $1,094.64. Net earnings from operation were $16,839.88 and total net earnings were $17,444.25, an increase of $8,920.31, or 104.65 per cent over last year.

The net earnings for November were at the rate of 7.62 per cent on the property value. The company is allowed a return of 8 per cent, if earned.

Empire Gas & Fuel Company's Output

The production of oil by the Empire Gas & Fuel Company in 1918 was in excess of 15,000,000 barrels and, according to officials, had it not been for the severe storm in August which blew down almost 200 derricks in Butler County, Kansas, these production figures would have been greater. The loss of these derricks caused serious interruption to the drilling program of the company for the year, putting back the bringing in of producing wells anywhere from 6 to 10 weeks.

The Empire Pipe Line Company in 1918 became the second largest carrier of crude oil in the United States, at times running well above 30,000 barrels daily and being exceeded in quantity of oil carried during the year only by the Prairie Pipe Line Company.

Activities of Managing Committee of American Gas Association

Committees Appointed—General Committee Appointed to Study Educational Work of Amalgamated Associations

The managing committe of the Technical Section met in New York, Thursday, Jan. 9, with the following members present: J. B. Klumpp, chairman; D. D. Barnum, E. H. Earnshaw, W. H. Fulweiler, R. G. Griswold, W. Cullen Morris, C. J. Ramsburg, E. C. Uhlig and G. I. Vincent. Present by invitation: Louis Stotz, assistant secretary-manager; George G. Ramsdell, E. N. Wrightington, chairman commercial section, and H. W. Hartman.

The chairman announced the personnel of the managing committee of the Technical Section as follows:

J. B. Klumpp, chairman, Philadelphia, Pa., the United Gas Improvement Company; D. D. Barnum, Boston, Mass., Boston Consolidated Gas Company; W. H. Blauvelt, Syracuse, N. Y., Semet-Solvay Company; R. B. Brown, Milwaukee, Wis., Milwaukee Gas Light Company; E. H. Earnshaw, Newark, N. J., Public Service Gas Company; W. H. Fulweiler, Philadelphia, Pa., the United Gas Improvement Company; R. G. Griswold, 60 Wall Street, New York City; R. B. Harper, Chicago, Ill., Peoples Gas Light & Coke Company; A. B. Macbeth, Los Angeles, Cal., Southern California Gas Company; W. Cullen Morris, New York City, Consolidated Gas Company; C. J. Ramsburg, Pittsburgh, Pa., the Koppers Company; E. C. Uhlig, Brooklyn, N. Y., Brooklyn Union Gas Company; G. I. Vincent, Syracuse, N. Y., Syracuse Lighting Company; J. D. von Maur, St. Louis, Mo., Laclede Gas Light Company.

The managing committee approved the appointment of the fol-

lowing committees to carry on the work of the Technical Section:

Committee on Refractory Materials

H. L. Underhill, chairman, Baltimore, Md., Bartlett-Hayward Company; J. H. Taussig, Philadelphia, Pa., the United Gas Improvement Company; J. S. De Hart, Jr., Newark, N. J., Isbell-Porter Company; J. W. Batten, Detroit, Mich., Detroit City Gas Company; W. H. Fulweiler, Philadelphia, Pa., the United Gas Improvement Company; W. H. Blauvelt, Syracuse, N. Y., Semet-Solvay Company; Herman Russell, Rochester, N. Y., Rochester Railway, Light & Power Company.

This committee, which was appointed last June, has been working in co-operation with a similar committee of the American Society for Testing Materials. In its work the committee has been able to emphasize certain phases of the testing of refractory materials of peculiar interest to the gas industry and to induce the committee of the American Society for Testing Materials to include these phases in their consideration of standard tests.

Committee on Electrolysis

J. D. von Maur, chairman, St. Louis, Mo., Laclede Gas Light Company; Prof. L. A. Hazeltine, Stevens Institute of Technology, Hoboken, N. J.; C. F. Burgess, Madison, Wis.; C. S. Fox, Long Island City, N. Y., Long Island Lighting Company; W. C. Beckjord, New York City, American Light & Traction Company; H. C. Sutton, Philadelphia, Pa., the United Gas Improvement Company.

The committee on electrolysis was appointed last summer, and has been in active touch with the Bureau of Standards, which has made several investigations of electrolytic conditions in various parts of the country and is preparing to publish bulletins on the subject in addition to those published in the past. The committee has already had meetings with the Bureau of Standards, and will continue to represent the interests of the gas industry on this very important subject.

Chemical Committee

The chairman informed the managing committee that at a recent meeting of representative gas chemists it had been recommended that a chemical committee should be appointed to consider all matters of a chemical nature in the association's activities, with power to appoint sub-committees and to co-operate with other associations on chemical matters of interest to the gas business. The appointment of such a committee by the chairman of the section was approved. It was understood that the committee be permitted to initiate their own activities and be requested to report monthly to the managing committee for approval.

Committee on Cast Iron Pipe Standards

Walton Forstall, chairman, Philadelphia, Pa., the United Gas Improvement Company; L. R. Lemoine, Philadelphia, Pa., United States Cast Iron Pipe & Foundry Company, 1421 Chestnut Street; W. Cullen Morris, New York, N. Y., Consolidated Gas Company.

Although the "Standards on Cast Iron Pipe and Specials" as adopted by the American Gas Institute are still in force, this committee, appointed by the chairman to keep in touch with the situation and to be prepared to act on any changes in standards which may be proposed at any time, was approved.

Committee on International Pipe Thread Standards

After consideration of the work done by the former American Gas Institute committee on pipe thread standards, it was decided that it would not be necessary for the Technical Section to maintain a committee on this subject, but that a representative should be appointed by the chairman of the section to co-operate with the present committee on standard pipe threads of the American Society of Mechanical Engineers. It was felt that the standardization of pipe threads was a matter more within the province of an organization such as the American Society of Mechanical Engineers, and that the representation of the gas interests thus provided for would prove ample.

Committee on Distribution Standards

Several plans suggested for work on the standardization of distribution practice throughout the country were considered, such as: Standardization of the method of making proof tests of consumers' meters; standards for construction work in the distribution department; labor-saving devices, such as trenching tools, etc.

It was the consensus of opinion that the above committee would prove valuable to the industry in the working out of distribution economies. In connection with the question of a standard method of testing meters, the work being carried on by the Bureau of Standards and some of the State regulatory bodies was referred to. It was considered most important that the interests of the gas industry be represented in this standardization, and such a function will probably prove one of the greatest that devolves upon the committee on distribution standards.

Carbonization Committee

The personnel of this committee is to include both operating men and representatives of the various types of carbonization apparatus. It was decided to instruct the committee to lay particular emphasis in its report on the carbonization of coal in coke ovens. The managing committee was unanimously agreed on the importance of the development of the coke oven industry and its close relation to the gas business. It was decided that the association should offer its services in the gathering of data on the technical phases of this industry, and encourage the taking of membership in the association by operators of coke oven plants.

Standard Tests Committee

The chairman was authorized to appoint a committee which will continue the work already started by the former committee of the American Gas Institute. The tests for determining the efficiency of a gas manufacturing plant had been considered and a standard report form, covering such tests, the proper units to be used and the results desired to be attained, had been developed. It will be the task of the present committee to

carry the work a step further by going into the detail of how the tests should be made and giving full directions for the proper use of the standard form worked out by the Institute committee.

NOMENCLATURE COMMITTEE

The collection and defining of the various terms used in the gas industry has been carried on during the past by a committee of the American Gas Institute, whose last report had indicated that about 5,000 words had been considered, of which 500 had been defined. It was decided that the completion of such a glossary would be of great benefit to the industry at large, and that while the scope of this work would also involve the accounting, commercial and manufacturers' sections, it would apply mainly to technical terms. The chairman was authorized to select a nomenclature committee and to confer with the chairmen of the other sections when matters pertinent to their fields were brought up for consideration.

COMMITTEE ON CALORIFIC STANDARDS

The meeting devoted considerable time to this important question and the necessity for studying the problem in its bearing on the gas interests in all parts of the country. It was recommended that a committee on calorific standards be appointed for the collection of all necessary data and to keep in touch with State and Federal bodies engaged on the matter.

GENERAL COMMITTEES

It was decided that the Technical Section should co-operate with the following general committees, which will be appointed by the executive board of the association:

COMMITTEE ON RELATION WITH BUREAU OF STANDARDS

It was decided to refer to the executive board the question of co-operation with the Bureau of Standards on such matters as the gas safety code and revision of Circular No. 32, with the suggestion that a committee be appointed by the board for this purpose. The Technical Section will hold itself in readiness to appoint any sub-committees necessary to handle technical details.

COMMITTEE ON HELPFUL PUBLICITY

This committee will be appointed by the executive board to counteract any harmful and erroneous statements which may be published pertaining to the gas industry. The Technical Section will appoint representatives as required to handle any technical details in connection with the work.

REPRESENTATIVES TO NATIONAL FIRE PROTECTION ASSOCIATION

Technical representatives will be appointed by the managing committee as required.

EDUCATIONAL COMMITTEE

A committee has been appointed by the executive board as a general committee to study the educational work formerly carried on by the American Gas Institute and National Commercial Gas Association, and to supervise the educational activities of the new association. The Technical Section will furnish such assistance as this committee may require.

The chairman asked the members of the managing committee to study the activities of the section so far outlined and to come to the next meeting prepared to offer suggestions on their extension and improvement.

New Gas Field Found Near Van Buren

That the Crow Oil & Gas Company has discovered a new gas field in southern Crawford County seemed more evident when its No. 7 well developed approximately 3,000,000 ft. of gas with the tools 8 ft. in the sand. The hole is 2,210 ft. deep and it is expected the producing sand will prove to be at least 100 ft. thicker. Drilling was suspended because the water pipes feeding the boiler had frozen. This test is located three-quarters of a mile west of Crow.

No. 6 is on the Williams farm and developed 5,000,000 ft. of gas in 118 ft. of producing sand, at a maximum depth of 2,388 ft. The supposed new field is several miles from the big wells in the Kibler field.

Industry Represented at St. Louis Night School by Eight Pupils

The gas industry of St. Louis is represented by eight pupils at the night school for practising and prospective safety engineers recently inaugurated by the Central Mississippi Valley Division of the National Safety Council in conjunction with the St. Louis Chamber of Commerce.

The Laclede Gas Light Company has sent the following men to the school: Frederick W. Frerichs, engineer; R. L. Heade, foreman; Herbert Schroeder, superintendent; Robert A. Crabb, attorney; C. Howard Stewart, assistant to the secretary, and E. H. Hofmeister.

The Majestic Manufacturing Company, makers of gas-fired hotel and other appliances, has sent Robert C. Higgins, superintendent, and Robert Trexler.

Consolidated Company Seeks Injunction to Prevent Officials From Enforcing 80 Cent Rate

Rate Is Unconstitutional and Confiscatory of Company's Property

Disclosing the fact that its net income was only $99,241.65 for the year ended October 31 last, or less than one-fourth of one per cent on the value of its investment of $69,697,700, exclusive of going value and other intangibles, the Consolidated Gas Company of New York filed a bill of complaint in the United States District Court recently, asking that the 80-cent gas law of 1906 be adjudged invalid because it is unconstitutional and confiscatory of the company's property. The company also asks that a permanent injunction be issued restraining the Attorney-General of the State, District Attorney Edward Swann and the Public Service Commission for the First District—the three parties made defendants in the case—from enforcing or attempting to enforce in any way the provisions of the 80-cent gas law enacted nearly thirteen years ago.

The Consolidated Gas Company's complaint sets forth that the gross operating revenues of the company from its gas business during the year ended October 31 last, amounted to $15,764,288.11, while the cost of

manufacturing and distributing its commodity, together with taxes and other operating expenses amounted to $15,665,046.46, leaving a net income of only $99,241.65. This represents a return of 6 per cent upon a principal sum of only $1,654,027, while the present value of the company's investment in the gas business, the complaint states, is not less than $69,697,700.

This action is begun in conformity with the opinion handed down by the Supreme Court of the United States nearly ten years ago, when the Consolidated Gas Company contested the legality of the 80-cent rate on the ground that the price for gas fixed by the Legislature by Chapter 123 of the Laws of 1906 was unconstitutional and confiscatory. In dismissing the gas company's complaint at that time the Supreme Court's decision was upon the ground that although a return of less than 6 per cent upon the value of its property would be confiscatory and although the finding of the lower court, as modified by the Supreme Court, indicated that the company would earn less than 6 per cent, the margin between possible confiscation and valid regulation was so close that it failed to show clearly and unmistakably that the rate of 80 cents per 1,000 cu. ft. would not afford the Consolidated Gas Company a fair and reasonable return upon the value of its property. The Supreme Court held that this was especially true inasmuch as the 80-cent rate had never been in effect, and the results upon the company's revenue under that rate were conjectural.

While recognizing the Consolidated Gas Company's constitutional right to receive a return of at least 6 per cent on the fair value of its property devoted to the public use, the Supreme Court decided that it was desirable that there should be a practical test to determine the sufficiency or insufficiency of the return from the 80-cent rate. If the test should show that the company could not obtain a fair return under that rate, the Supreme Court held that the company should have the opportunity to again present its case. At no time since that decision was rendered has the company earned a return of 6 per cent on its property devoted to the public use.

Since 80-Cent Gas Rate Became Effective There Exists a Deficiency

On the contrary, in the complaint filed in the suit just begun, the company says that since the date the 80-cent rate was made effective there now exists an aggregate deficiency of at least $12,000,000, a sum that should be added to the value of the company's property, now valued at $69,697,700. Since Dec. 31, 1906, there has been $14,085,265 added to the value of the company's property devoted to its gas business, which was valued by the United States Circuit Court in the former suit at $55,612,435. The cost of reproduction of the property at the present time would greatly exceed $69,697,700.

The complaint further states:

"During the year ending Oct. 31, 1918, the gross operating revenues from your orator's gas business amounted to $15,764,288.11 and the cost of manufacturing and distributing said gas, together with taxes and other operating expenses, amounted to $15,665,046.46, leaving a net income of only $99,241.65, which is less than ¼ of 1 per cent on the value of your orator's investment, and which represents a return of 6 per cent upon a principal sum of only $1,654,027. It is pointed out that the minimum value of the property upon which the company is therefore deprived of any return by the 80-cent rate is not less than $68,043,673, while the maximum value of the property, deprived of any return based upon the cost of reproduction of said property is a much greater amount.

It is further set forth that

"A return of only 6 per cent upon the minimum value aforesaid of your orator's investment in its gas properties would amount to not less than $4,181,862 per annum, or 23.29 cents per 1,000 cu. ft. of gas sold. The said net earnings of $99,241.65 for the year ending on Oct. 31, 1918, amounted to only 55/100s of 1 cent per 1,000 cu. ft. of gas sold. The deficiency in your orator's earnings during the said year below 6 per cent on the minimum value of your orator's said investment amounted to $4,082,620.35, or 22.74 cents per 1,000 cu. ft. of gas sold; and this deficiency is caused directly and solely by the arbitrarily restricted price at which your orator is compelled by the State of New York to supply gas to your orator's customers."

Average Daily Loss of $14,264

The average daily sales of gas during the winter months, the Consolidated Gas Company states, amount to 62,728,800 cu. ft., which, at 22.74 cents per 1,000, establishes as the company's daily loss the sum of $14,264.53 per day, which loss the company can by no possible means recover. This continuing daily loss is in addition to the deficiency of $4,082,620.35 in the company's earnings during the year ended Oct. 31, 1918.

The company's complaint says that the cost of manufacturing and distributing gas has greatly increased since the former suit was dismissed by the United States Supreme Court. This, the complaint says, is "by reason of the increase in the cost of coal, enriching oil and all other materials used in the manufacture and distribution of gas, in the large advance in the wages of employees, and in the increase in taxes; and there is certainty that there will be a very substantial increase in such cost in the year 1919."

"The value of money has greatly depreciated and is now far less than at the time of said former decree," the Consolidated Gas Company's complaint says, "and the purchasing power of a dollar at the present time is the equivalent of only about 60 cents at the time of said decree, so that an investor who might now receive 10 per cent upon his investment would not receive more than an investor in 1909, who received 6 per cent upon his investment. A return or profit of 6 per cent upon your orator's investment in its said plant and property is, therefore, no longer a fair, reasonable and adequate return upon such investment.

"While the value of the dollar received by the stockholder has decreased, as stated herein, the present cost of the property or similar property devoted to the public service has greatly increased, the result being that the owners of it, while receiving a return in a decreased purchasing power dollar, are devoting a very greatly increased present cost investment to the public service."

The permanent injunction against Charles D. Newton, as Attorney-General of the State of New York; Edward Swann, as District Attorney, and the Public Service Commission, is asked to restrain them from in

any way enforcing or attempting to enforce the provisions of the Act of 1906 against the Consolidated Gas Company of New York or from bringing any actions thereunder to force certain penalties prescribed in the Act of 1906 "or from bringing any actions in mandamus or for an injunction in any court whatsoever, for the purpose of compelling compliance" by the company with the Act of 1906.

Believes Public Service Commission Has No Power to Permit Company to Increase Rates

The company believes that the Public Service Commission has no power to permit it to increase the rate which the company may charge for gas supplied, in excess of the maximum rate of 80 cents per 1,000 cu. ft. Should the company attempt to increase its rate it would be unable to collect the money. Chapter 48 of the Consolidated Laws of the State provides "that the charging by any gas company of a rate in excess of that permitted by law shall be a complete defense to any action by such company against any consumer for any unpaid bill." It would therefore be the duty of the Attorney-General of the State or the District Attorney to prosecute the company for each violation of law, and endeavor to force and collect the enormous penalties prescribed by the law.

The bill of complaint then states that on Oct. 31, 1918, the Consolidated Gas Company had 498,660 consumers. It explains that if the company charged these consumers a rate in excess of the statutory rate of 80 cents and should discontinue the gas service to such consumers as refused to pay their bills, that the company would be subjected to a multiplicity of suits. A penalty of $1,000 was provided by the 80-cent law for each separate charge to any consumer in excess of the said statutory rate. It is explained that if the company should make a charge in excess of the said 80-cent rate each month to each of its consumers, the aggregate of the penalties so incurred in one year would amount to over $5,983,920,000, and the damage to the company would be irreparable and absolutely destructive of all its assets, franchises and property.

Step Taken With Great Reluctance

An officer of the Consolidated Gas Company recently said that the application for an increase in the price of gas had been made with great reluctance. The hope had been cherished, the official said, that the company could continue without being forced to take the step made.

The company has been able to continue to pay its dividends partly from other revenues than those derived from its gas business and partly from past earnings on the company's other investments heretofore withheld from distribution to its stockholders.

There is no prospect of any improvement in the coming year and it may be years before the conditions affecting the cost of labor and materials and other elements of cost resume a normal status. In the meantime the price of gas in New York City, the same as of all other commodities, should be adjusted to meet the increased cost of producing and distributing it. This has been done in about every other municipality in the country.

Assuming that the court will allow us the increase we seek, the effect upon the gas bills of the great majority of gas consumers will be negligible—less, in fact, than one cent per day. The average gas bill in New York City amounts to about $28 per year. An increase of 25 per cent would, therefore, affect the average bill about $7 a year, or two cents per day. Compared with the increase in the prices paid for other necessities, due to the war, it is very small, as every householder knows.

Infrequency of Complaints Indicates Efforts Have Not Been in Vain

Notwithstanding the inadequacy of its price for gas in the past, the company has made every endeavor to maintain the high standard of service to the public which has characterized its record for many years. The comparative infrequency of complaints indicates that the company's efforts have not been in vain, notwithstanding its inability at all times to obtain an adequate supply of skilled labor.

There has been no complaint to the company, during the last trying months, of a case of intentional neglect on the part of the company's employees to promptly meet the wishes of our customers.

There are tens of thousands of requests made to us each year for personal attention. Thousands of these are perhaps of minor importance, but they are given the same prompt attention as is given to major cases. In each case we meet the expense in time and labor. Large expenditures of money are made annually in the upkeep of our plants and distributing systems. Had this not been the case, the company could not have undertaken and successfully met the demand of the United States Government at a critical time for the manufacture of explosive materials, and carbon for the absorption of the poison from the gases used by those countries with whom we were recently at war.

We rent gas appliances and keep them in repair. This is not done in any other place in the country. The yearly rental is computed upon the basis of actual cost. The value of this service to gas consumers may be gathered from the fact that the Consolidated and its affiliated companies have 460,099 appliances out on rental. Thousands of dollars are expended annually on this maintenance and upkeep, and that is only one example of the scores of items that go to make up the details of furnishing the unexcelled gas service which we have always given the citizens of New York City.

We believe that the company's undertaking to obtain a price for its gas which will give it a fair and reasonable return on its investment will meet with the approval of our customers. The Government recently compiled figures showing that while prices of commodities had increased 66 per cent, the average family spends 14 per cent of its general expenses for moving-picture shows and only 1 per cent for the gas the family uses.

Water Heater Company Assets Ordered Sold at Auction in Bankruptcy

The assets of the American Water Heater Company, of 1100 North Sixth Street, St. Louis, have been ordered sold at auction by the referee in bankruptcy. The property that will go under the hammer includes the entire water heater manufacturing plant, its stock and equipment, three letters patent issued by the United States Patent Office covering the automatic water heater and gas burner construction of the company's

product, and all the office furniture of the company.

Allen Branin is trustee and Horace L. Dyer, of the Central National Bank Building, St Louis, is attorney for the trustee

Commission Issues Order Requiring Indiana Company to Stop Charging Consumers for Blowing Out Water in Pipes

The commission issued an order requiring the Northern Indiana Gas & Electric Company, which operates in many northern Indiana cities, to cease charging consumers for the process of blowing out condensed water that remains in service pipes leading from the mains of the company to the homes of consumers. Heretofore the company has been charging these consumers for its work in cleaning out these service lines, and the commission's order points out that such a charge never has been authorized by the commission and is not legal. Commissioners pointed out, however, that the company is entitled to charge for service in cleaning out stoves, grates and similar appliances belonging to the consumers themselves, and that petitions from consumers to have the company refund such charges as these latter will not be granted.

The company operates plants in South Bend, Mishawaka, Fort Wayne, Decatur, Ossian, Bluffton, Michigan City, Lafayette, Peru, Wabash, Logansport, Frankfort, Lebanon, Crawfordsville, Hammond and elsewhere.

Appeal Filed in Webster Groves Company Rate Reduction

The St. Louis County Gas Company, of Webster Groves, Mo., which supplies gas to seven suburban towns about St. Louis, has filed an appeal with the Missouri Public Service Commission asking that the commission's recent order for an 8 per cent reduction in the company's rates be set aside.

Without warning the commission several weeks ago ordered this company to reduce its rates to a schedule graduated from $1.30 per 1,000 cu. ft. for the small domestic consumer to 95 cents per 1,000 cu. ft. for big industrial consumers.

The commission's order of this reduction was accompanied by a statement indicating that the action was induced by what the commission apparently thought was a decline in the cost of coke to the St. Louis County Gas Company. Louis H. Egan, general manager of the gas company, in his appeal from the commission's ruling pointed out that a wrong interpretation was placed by the commission on the coke cost figures presented by the company.

Waukegan Company Helped to Make Output of Shells Possible

The North Shore Gas Company, of Waukegan, Ill., played an important part in helping to supply the United States with 20,000,000 three-inch shells in the world war. Toluol was used extensively in the manufacture of "T. N. T." an extremely high explosive used in the manufacture of shells.

This product formerly was not taken into account by the local gas company as there was no market for it, but the fact that high explosive shells were required in such numbers caused an immediate demand for toluol. The company turned its entire output of this product over to the government.

Emergency Gas Rates Approved

The Board of Public Utility Commissioners has denied the application of the Atlantic City Gas Company for increased rates but has permitted the filing of a schedule of emergency rates for immediate consumption. An emergency surcharge of 25 cents a 1,000 cu. ft. of metered gas to be added to the schedule of rates in force prior to June 26, last, is permitted.

East Ohio Rates Raised—Effective Feb. 6

Gas will be 37 cents per 1,000 ft. to the Cleveland consumer after Feb. 6, M. B. Daly, president and general manager of the East Ohio Gas Company announced recently.

The new prices will be 37 cents gross and 35 cents net. Present prices are 31 cents gross and 30 cents net. The net price is that with discount deducted before a specified time.

The change in the price of gas comes at the end of eight years of a ten-year contract with the city under which the company is operating. The advance is permitted in the terms of the contract and it is said the city has in its power no action to stop the raise.

Mr. Daly said that increase in the cost of production and distribution of the gas was the reason behind the advance. The new price will continue until the termination of the ten-year contract, Feb. 6, 1921, he said.

"Wells that cost from $5,000 to $6,000 before the war are costing from $14,000 to $16,000 now," Mr. Daly said.

"Cost of operation of wells and pipe lines has increased from 50 to 60 per cent. The war tax has added to the cost of distribution."

Missouri Public Service Commission Without a Secretary

The Missouri Public Service Commission again is without a secretary. Uel W. Lamkin, former superintendent of schools of Missouri, who was appointed to succeed the late Secretary Bradbury, has resigned in order to accept the managership of the St. Louis office of the Federal Board of Vocational Education with jurisdiction over Missouri, Kansas, Iowa and Nebraska.

The position of secretary of the Missouri Public Service Commission carries a salary of $3,600 a year. Mrs. Kate Morrow, assistant to the late Mr. Bradbury, is acting as secretary pending appointment of a permanent secretary.

Personal Notes

D. M. YOUNG'S resignation as superintendent of the gas department of the San Diego (Cal.) Consolidated Gas Company was accepted at the recent annual meeting. Mr. Young severed his connection with the San Diego concern to take over the management of the Tacoma (Wash.) Gas Company. As the Tacoma company is, like the San Diego Consolidated Gas Company, owned by the Byllesby interests, this change of positions is a promotion.

SAM C. BRATTON, for the past eight years commercial manager of the Portland (Ore.) Gas & Coke Company, left Portland Jan. 15 for New York, where he has been appointed manager of the commercial department of the Electric Bond & Share Company of New York, which is banker and fiscal agent for the American Power & Light Company and its many operating companies of which the Portland Gas & Coke Company, and the Pacific Power & Light Company are a part. The appointment is in the nature of a distinct promotion, according to Guy W. Talbot, president of the Portland Gas & Coke Company, and is the direct result of the success with which Mr. Bratton's administration of the local position has been marked. Mr. Bratton came to Portland eight years ago and has been identified actively with civic bodies, serving one term as president of the Portland Ad Club.

GEORGE S. SPEAKER, manager of the Lebanon (Pa.) Gas & Fuel Company, was this afternoon unanimously elected a member of the board of directors of the Lebanon Valley Fair Association, filling a vacancy in the directorate caused by a death.

A. S. B. LITTLE, gas engineer of the Public Utilities Commission of Illinois, who obtained six months' leave of absence, found it impossible to complete in that time the work on which he was engaged by the Central States Gas Company, Vincennes, Ind., and therefore the Illinois commission, at his request, extended the leave of absence another month. Mr. Little will therefore return to the commission with headquarters at Springfield, Ill., on Feb. 1, 1919. His work for the Vincennes company embraced the remodelling of the inclined ovens; the building of five benches of retorts, furnished by the Missouri Fire Brick Company, St. Louis; the putting in of a new boiler; the building of a new retort house; revamping of the distribution system; complete change in the operation plans of the company, and starting of a new system of account.

F. W. BEDARD, general manager of the Citizens Lighting Company for the district from Cairo to La Salle, Ill., recently left La Salle for Champaign, to take up new duties. His new position has advanced him to the general managership of the street railways, electric and gas and steam heat utilities of Urbana and Champaign.

BERTRAM DIAMOND, of Lockport, N. Y., is the new superintendent of the Norwich (Conn.) Gas & Electric Company. Mr. Diamond comes to the J. G. White people from the Lockport Gas & Electric Management Company, and is therefore a new man in the system. He assumed his new duties Jan. 20. Mr. Diamond succeeds P. R. Chambers, who is now in charge of the Oneonta plant of the J. G. White Corporation.

DANIEL KREIDER, a former instructor in the Palmyra High School, has taken a position with the Lebanon (Pa.) Gas & Fuel Company as bookkeeper and entered upon his duties at the offices on North Eighth Street, having been honorably discharged from the army. He has just returned from the military camp at Camp Lee, Virginia, where he had been for the last six months.

JOHN MICHAEL WHITE, 82 years old, civil war veteran and formerly superintendent of distribution of the Equitable Gas Light Company of New York, died at his home, 1237 Union Street, Brooklyn, on Jan. 13 of paralysis.

Construction Notes

Bath's New Gas Plant in Operation

Bath's new gas plant is in successful operation.

After the hardest kind of a fight against acute labor conditions, freight embargoes and tie-ups, mechanical difficulties, bad weather and a thousand and one delays the Bath (Me.) & Brunswick Light & Power Company has completed its new gas plant.

This plant is believed to be large enough to give Bath a supply of gas both adequate and satisfactory for its present needs and for future needs for a great many years to come. It will turn out in a few hours all the gas that Bath now consumes in a day—it will turn out in a day twice as much as Bath could use if every person in the city used gas for every practicable purpose.

The starting of a new gas plant relieves a condition that has been as unsatisfactory to the Central Maine Power Company, of which the Bath & Brunswick Light & Power Company is a part, as it has to the people of Bath. When the Central Maine Power Company took over the Bath company and began to conduct it as a subsidiary, it found the gas condition most unsatisfactory. It went to work as promptly as possible to improve conditions and did its best in the face of conditions that made fast work impossible. It was only as a result of securing priority in purchasing and making shipments that it was possible to get the work done at all.

New Water Gas Set Installed at Arlington

The Arlington (Mass.) Gas Light Company, which supplies gas to the four towns of Arlington, Belmont, Lexington and Winchester, has recently installed a new 9-ft. water gas set for making its gas. Its old plant had proved insufficient to meet the growing demands of its customers. Although no definite figures were given, the company states that its business had been gradually and steadily increasing. Its works, however, due to abnormal war conditions, have had to be confined to the selling and delivering of gas to its customers in these four towns. No construction work on any large scale has been carried on.

The company has four employees in the service. The situations of these men are being held open for them, and the company expects the four to return there to work.

By-Product Coke Oven Gas Turned Into Niagara Mains

Semet-Solvay Company Furnishes 500,000 Cu. Ft. per Day—Will Double That Amount After April

By-product coke oven gas from the Semet-Solvay plant near Buffalo, N. Y., was turned into the mains of the Niagara Light, Heat & Power Company of Tonawanda, N. Y., on Jan. 9. The manufacturing plant of the company will now be used as a distribution station with the gas making appartus kept as standby equipment for the present.

The Semet-Solvay Company will furnish the Niagara company with 500,000 cu. ft. of gas each 24 hours until April, when it is expected to furnish double that amount.

$500,000 Gas Plant Sold for Junk

Machinery Out of Date

Because the type of machinery used has been supplanted by the rapid progress of invention in the past five years, so that its use was no longer regarded as sound business, the costly gas generating plant of Southern Public Utilities Company on South Boulevard, Charlotte, N. C., is being broken up as junk and has been sold to a wrecking concern which is reducing the costly machinery to scraps to be sold as scrap iron.

Five years ago this plant was regarded as near the last word in modern gas generating equipment.

"This machinery and the plant probably cost the company $500,000 a few years ago," said Supt. Wommack, of the Public Utilities Company.

"The machinery is in good condition and the plant is, or was a few weeks ago, in first-class condition," added Supt. Wommack, "but the type of machinery has been so rapidly supplanted by new inventions and more modern and more economical types of machinery, that the continued operation of this plant did not seem profitable or desirable and therefore the company has decided to dispose of the whole plant as junk."

Everything about the plant but the building is included in the contract with the wrecking concern. The plant was built to utilize gas from the local plant, where the machinery and processes used, converted the gas into power to be used in propelling street cars and for general power purposes. Many engineers had visited this plant but a few years ago to study its construction and to get acquainted with the process, then comparatively new, of gas generator operation.

Plant Improvements at Sandusky

The coal handling equipment for installation in the plant of The Sandusky (Ohio) Gas & Electric Company has been received and the work of installing same is progressing favorably. Within a week it is expected that a part of the equipment can be put in operation, which will be the first step toward reducing operating expenses.

TAX PROBLEMS

Edited by H. Ely Goldsmith, Certified Public Accountant, President Accurate Audit Company, 1265 Broadway, New York City

It is the object of this department to advise readers of the American Gas Engineering Journal of the requirements of law in connection with income and excess profits taxes, and to answer questions in regard to individual cases. All letters addressed to the Editor, Tax Department, inquiring for information in relation to the tax laws, will be answered in this column, without charge.

Inquiries

Sir: I have heard many discussions as to the excess profits tax, and being in business alone, without a partner, having had a good business year in 1918, will I have to pay an excess profits tax?

R. B.

Editor's Note: Under the provisions of the proposed revenue act, incomes of individuals are not subject to the excess profits tax. There is, however, a graduated scale of surtaxes on incomes of individuals in excess of $5,000, varying from 1 per cent on incomes between $5,000 and $6,000 to 65 per cent on incomes of $1,000,000 and over.

Sir: I have just been honorably discharged from the army, where I held a captain's commission. I had been regularly employed before I enlisted, and while in the army my employers forwarded to my wife the difference between the amount of pay received in the army and what they had paid me before. Must I make a tax return of this? Captain Greene.

Editor's Note: The salary which you received while in active service overseas is not taxable, being particularly exempt from taxation under subdivision 8 of Section 213 of the proposed revenue act, as follows:

"The term 'gross income' does not include the following items: . . the amount received during the present war by a person in the military or naval forces of the United States as salary or compensation in any form from the United States for active service in such forces."

However, you have continued to draw your salary, or part thereof, from your employer, which money was given to your wife. As to that amount you must make an income tax return in the same manner as any other person, and you are taxable on that regardless of the fact that you were in the army, subject to the specific exemption.

Sir: My husband died in August, 1918, leaving myself and son, and up to that time his earnings amounted to about $3,000. He was insured and I received $5,000 from a life insurance company on his death. Must I file a tax statement in regard to this? Widow.

Editor's Note: Proceeds of life insurance policies are exempt from taxation, but the income received by your husband prior to his death must be included in the tax return to be filed by the executor or administrator of his estate. As you have a child and are the head of a household, you would be entitled to a deduction of $2,200.

If you have had any income since your husband's demise, that amount of income must be included in your tax return.

Sir: I reside in a house that I own, and pay land taxes and interest on a mortgage. Are these expenses permitted to be deducted from my income tax report?

Owner.

Editor's Note: The interest paid by you on the mortgage of your house, as well as your taxes on the property, is deductible expense on your income tax return, notwithstanding the fact that you reside in the house.

Sir: I have put into some dwelling houses furnaces for the heating of each one individually. I have been put to considerable expense for this purpose, and beg to inquire if I can allow for this expense when I file my income tax statement. Realty.

Editor's Note: A heating plant or apparatus installed in any building is considered as a permanent improvement to the property and is not deductible as an expense.

Your having installed a furnace and the necessary apparatus for heating these dwellings makes a permanent improvement, as above stated, and your expense for doing so is not deductible.

Sir: Our corporation has a capital of $10,000. During the years 1914, 1915, 1916 and 1917 we accumulated a surplus of $10,000. We have filed tax returns for these years. During the year 1918 this surplus was distributed to the stockholders. Will the corporation be compelled to pay a tax on it this year? J. B. Co.

Editor's Note: You are advised that there is no tax to be paid by the corporation as such, but the stockholders are liable to surtax at the rates prescribed by law for the years in which the corporation accumulated the earnings from which these dividends were paid. The dividends shall be deemed to have been paid from the most recently accumulated earnings.

It therefore becomes your duty to determine, for the information of the stockholders, when the $10,000 dividend which you declared was earned. Assuming that it was earned as follows: $2,000 in 1914, $1,500 in 1915, $3,000 in 1916, $2,500 in 1917 and $1,000 in 1918, the individual stockholders would be compelled to report their portion of the dividend in just that proportion on their income tax return.

I call your particular attention to the fact that if at the time of the distribution of the dividend there had been earnings during 1918, the dividend will be considered to include such earnings for the purpose of taxation.

If you care to let me have full particulars, I would be pleased to answer your inquiry in detail in a self-addressed stamped envelope.

Sir: Under the law as enacted in 1913, a partnership, when requested by the commissioner of internal revenue or any district collector, was required to render a return of the earnings, profits and income of the partnership (Section 107).

Under this section there was no general call during 1915, 1916 and 1917. In 1918 a call was made for co-partnership returns with a net income of $6,000 or more. The commissioner of internal revenue even at that time had the right to require returns from co-partnerships having a net income of less than $6,000.

In the proposed law the matter is not any further left to the discretion of the commissioner, but it is made mandatory for each co-partnership to file a return no matter what its earnings.

There is no tax on co-partnerships provided for in the law as it has been reported by the Senate, but a co-partnership return must be filed in order to give information to the commissioner with which to check up the returns filed by the individual co-partners. This, however, may be changed in that co-partnerships may be subject to excess profits and war taxes when the revenue law is finally passed. G. B. & Co.

Editor's Note: I have heard of several cases recently where corporations and others claimed to be liable at the 8 per cent tax rate under the 1917 revenue act, where the department upon the audit of their returns assessed them on an imaginary or a so-called presumptive capitalization under Section 210 of the revenue act.

In my opinion this assessment in many cases was unjustified, and claims for refund may well be made with prospect of success.

In order to consider your particular case, you should send me more details. The general theory upon which the department has made these disallowances is, according to a statement made to me by one of the officials, that they considered a merchandising business to require an investment of capital. The department claims that if it is not invested by the principal it may be invested in the form of credit by the man from whom the taxpayer bought his goods.

I feel that this contention would not be upheld by the commissioner upon an application for a rehearing and review, and that any excess tax collected from you will be refunded if the commissioner can be convinced that your claim is justified.

I should be pleased to hear further from you and others in a similar situation.

Commission Authorized 15-Cent Increase for Waukesha Company

Through an order signed by the Wisconsin Railroad Commission on Dec. 28, 1918, the Waukesha Gas & Electric Company has been granted another increase in commodity rates. The raise granted is 15 cents per 1,000 cu. ft. on the entire schedule. The company asked for an increase of 20 cents per 1,000. Following is the summary of the commission's order:

1. That the applicant, the Waukesha Gas & Electric Company, be and the same hereby is authorized to temporarily discontinue its present rates for gas and to substitute therefor, subject to all other provisions of this order, the following schedule:

	Per 1,000 Cu. Ft.
First 10,000 cu. ft. per month	$1.60
Next 15,000 cu. ft. per month	1.40
Next 25,000 cu. ft. per month	1.30
Next 50,000 cu. ft. per month	1.20
Next 100,000 cu. ft. per month	1.05
Over 200,000 cu. ft. per month	0.95

2. That the prompt payment discount of 10 cents per 1,000 cu. ft. now in effect be continued as a part of the temporary schedule herein authorized.

3. That the rates herein authorized may be put into effect for gas subsequent to the first meter reading following the date of this order and until further action is taken by the commission.

4. That the Waukesha Gas & Electric Company shall monthly debit operating expenses and credit depreciation reserve with an amount not less than $425 per month in its gas department, and that the reserve so created shall be used only for the purposes provided by the public utility law.

5. That the commission retains jurisdiction to alter, amend or revoke this order at any time.

The Depositors Oil & Gas Company has declared a 20 per cent dividend for 1919, payable 5 per cent quarterly, beginning Jan. 31, to stockholders of record of Jan. 20.

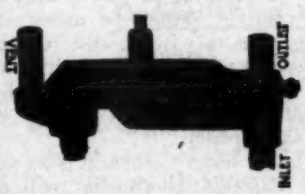
The West Lafayette Gas Company, West Lafayette, Ohio, capital $20,000; H. B. Walker, W. K. Martin, O. A. Wheaton, R. G. Snider and Tracy H. Sharwood.

RITER-CONLEY COMPANY

STEEL CONSTRUCTION

PITTSBURGH

HIGH PRESSURE



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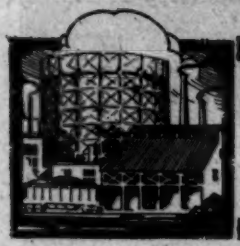
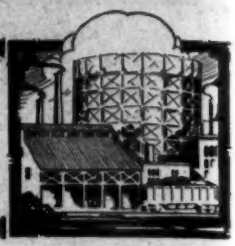


With The Equipment & Appliance Manufacturers



Conducted by Business Department of American Gas Engineering Journal

A Thermostat That Can Be Attached to Any Make and Kind of Water Heating Apparatus

Recently we received through the mails literature describing the Jarvis "Flash Action" Thermostat, which made what looked like rather extravagant claims for it, such as, "we believe it is the only Thermostatic Gas Control which permits the lighting of the burner of the gas water heater from the small pilot light, without the intervening assistance of the copper gauze flame check and without any 'back flash' in the burner."

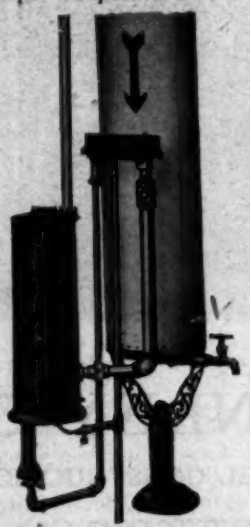
The man who edits this department of the JOURNAL is always looking up the merits of all kinds of apparatus offered for sale through gas companies, and without making an appointment in advance, called on the B. Ryan Company, 60 East 10th Street, New York, who make the Jarvis "Flash Action" Thermostat, and asked that they give him a demonstration, and Mr. Ryan promptly complied with the request.

On the test stand were three Jarvis "Flash Action" Thermostats attached to three heaters and boilers. In all three the heating flame was entirely out, as sufficient water had just been heated to the proper temperature; only the pilot light was burning.

I lighted the three burners of the heaters with a beautiful bunsen flame by the drawing of water and without "any 'back flash' in the burner." Still being skeptical I asked that the burners be taken off the heater. On examination I found that no flame check of any description was in any of the burners, bearing out in every particular the statement that the burner of the small gas water heater could be lighted "without the intervening assistance of the copper gauze flame check and without any 'back flash' in the burner."

The burners were replaced and the gas again lighted to heat the cold water that entered the boiler to replace the hot water withdrawn.

When this cold water was heated to the proper temperature the Thermostat turned off the heating flame completely, showing that with this system the heating flame burns at its maximum when the water is required to be heated or the heating flame is entirely out when the required amount of water is heated to the proper temperature.



JARVIS "FLASH ACTION" THERMOSTAT

It has been the one object of the gas companies to see the "all gas kitchen," and the main thing standing in the way of seeing this condition brought about is the "water-back" or furnace coil which delivers hot water.

Another feature that will commend it to the gas companies is that no extra gas service from the street main is required and no extra meter need be installed. The gas pipe service and meter already in the home will do. This means a considerable saving to the gas company.

Another feature that will commend it to the householder is that the small gas water heater (any make) and the boiler (any size) already in the home can be made into an efficient, economical and automatic hot water storage system, should mean much to the people of moderate circumstances as it put within their reach the luxury of automatic hot water at a small outlay for the installation.

The Institute Department of the New York *Tribune* recently made an exhaustive test of the Jarvis "Flash Action" Thermostat in their laboratory. We quote a part of their report:

"The Thermostat was connected to a gas tank water heater and was kept in service for a period of two months. During that time it did not once fail to operate, and kept a constant supply of twenty gallons of water at an average temperature of 170 deg. Fahr."

Water heating by gas should become one of the most valuable assets of every gas company. At present it is almost at the bottom of the list. To bear this out allow us to quote from a Washington, D. C. report to one of the largest cities in the United States as to the proportion of gas consumed for the various purposes in that city.

Open Flame Burning	5%
Mantle Lighting Burning	20%
Top Burner Cooking	40%
Ovens, Domestic and Industrial	20%
Water Heating	5%
High Temperature Industrial Uses	10%

Water heating by gas is only five per cent; it should be many more times than this if the cost for automatic hot water was brought within the reach of the many by a cheap initial installation cost and an econonical upkeep.

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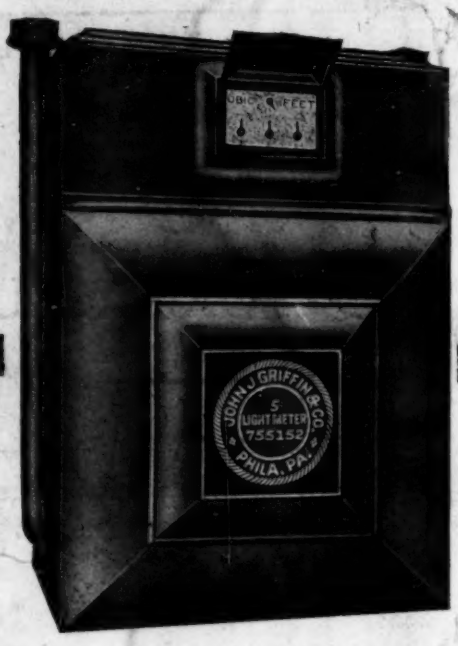

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